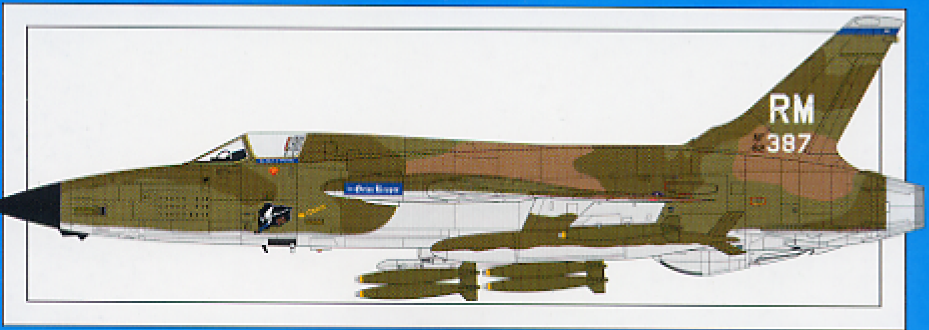
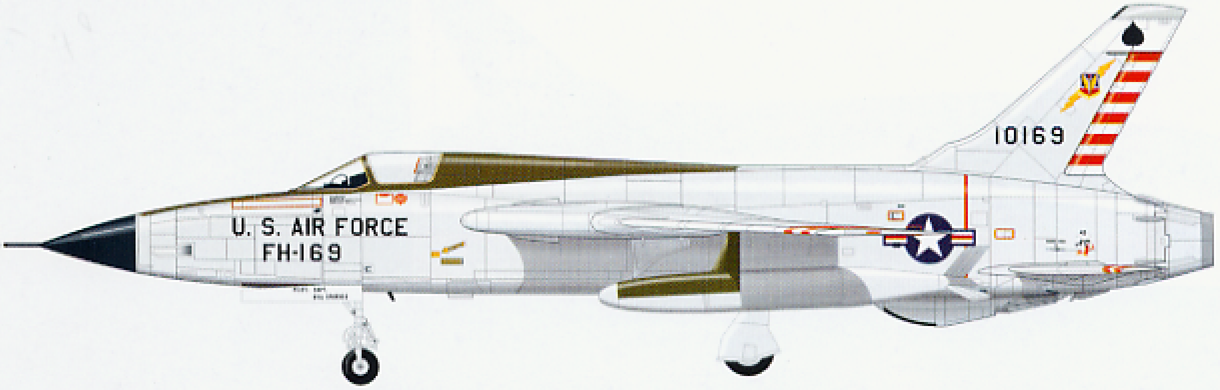


WARPAINT SERIES No. 38

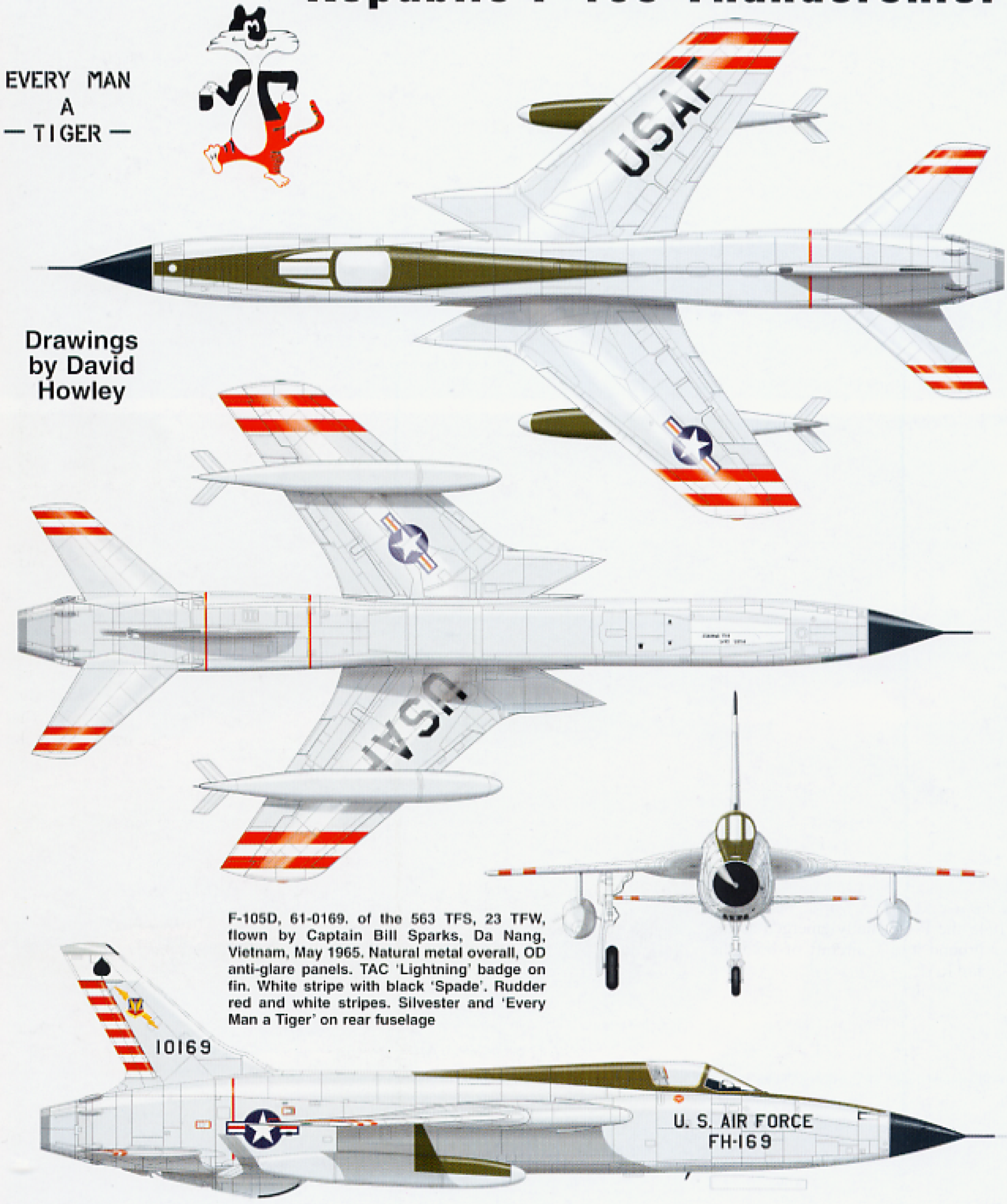
REPUBLIC F-105 THUNDERCHIEF

BY KEV DARLING

In-flight refuelling became an essential part of most fighter-bomber operations in Vietnam. The two F-105Gs shown here, from the 35 TFW are waiting their turn to make contact with the KC-135 tanker accompanying their operations in North Vietnam. (via Dennis R.Jackson)

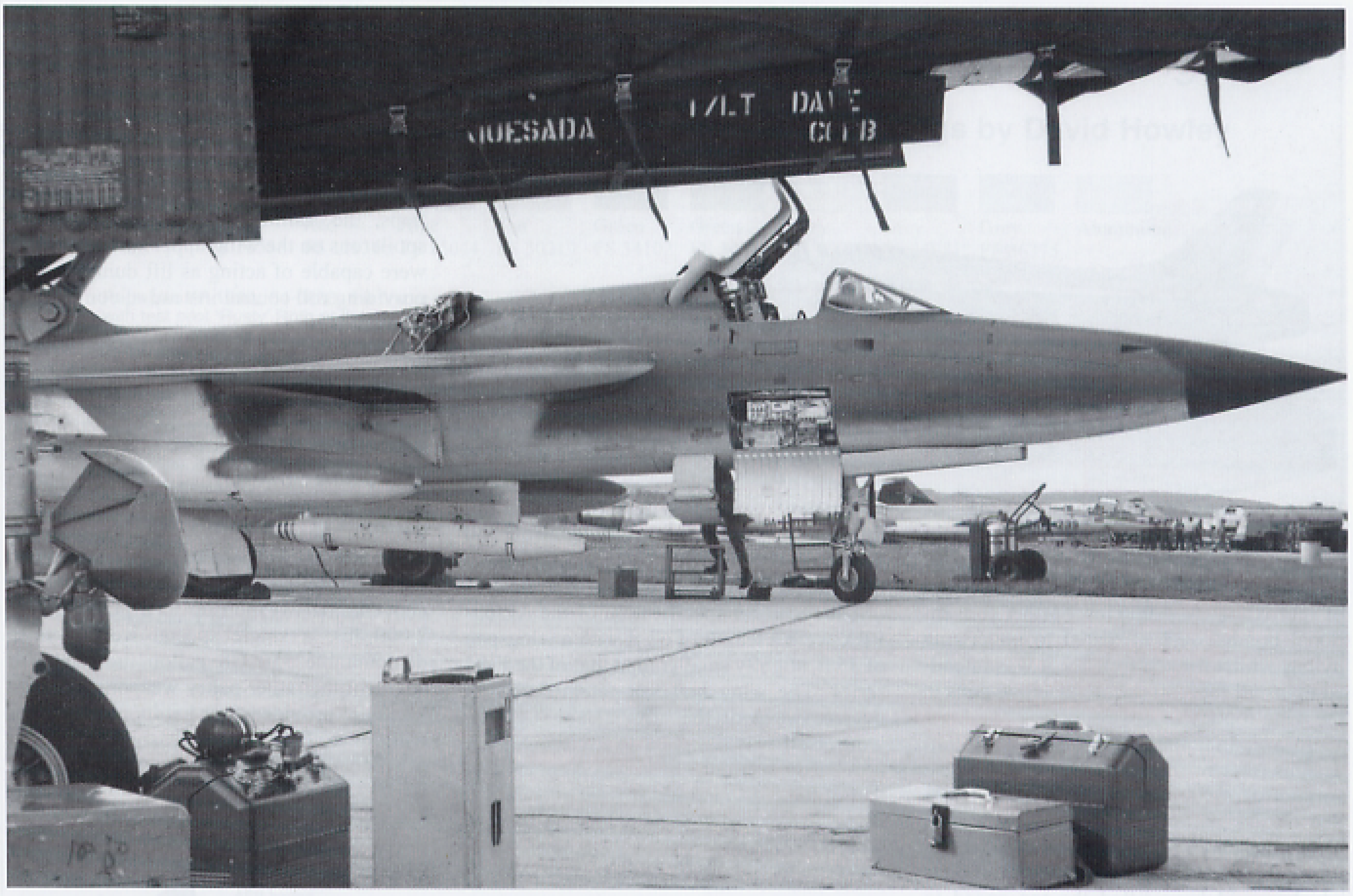


Republic F-105 Thunderchief



Drawings by David Howley

F-105D, 61-0169. of the 563 TFS, 23 TFW, flown by Captain Bill Sparks, Da Nang, Vietnam, May 1965. Natural metal overall, OD anti-glare panels. TAC 'Lightning' badge on fin. White stripe with black 'Spade'. Rudder red and white stripes. Silvester and 'Every Man a Tiger' on rear fuselage



REPUBLIC F-105 THUNDERCHIEF

By Kev Darling

Thud, Lead Sled, Ultra Hog. Derogatory and derisory were the epithets heaped upon the big fighter-bomber from the Republic Aircraft Company. In the cauldron that was Vietnam all this was to change and 'Thud' was said with pride by the pilots that flew the F-105 Thunderchief.

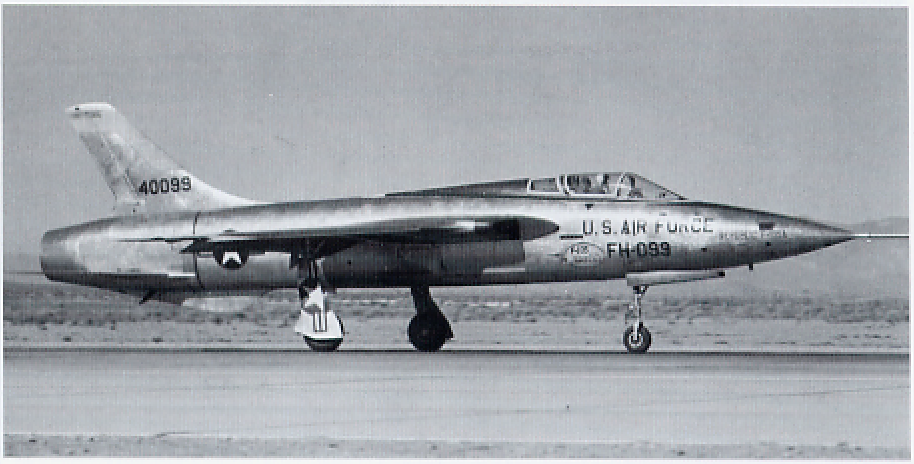
Republic Aircraft always had a reputation for building solid almost invincible aircraft beginning with the Seversky P-35 which by the process of evolution finally emerged as the Republic P-47 Thunderbolt. During the events that overtook the world throughout 1939-1945 the P-47 finally emerged as the premier ground attack aircraft of both the USAAF and RAF. After the end of hostilities Republic joined the jet age and produced the F-84F Thunderjet, the F-84G Thunderstreak and the RF-84 Thunderflash. The latter two designs featured severely swept wings and were single engined. The last named was equipped with a reconnaissance nose which meant that the intakes had to be relocated from the nose to the wing roots, these being oval in cross section, coming complete with extensions to smooth out the airflow directed to the compressor face.

PRIVATE VENTURE

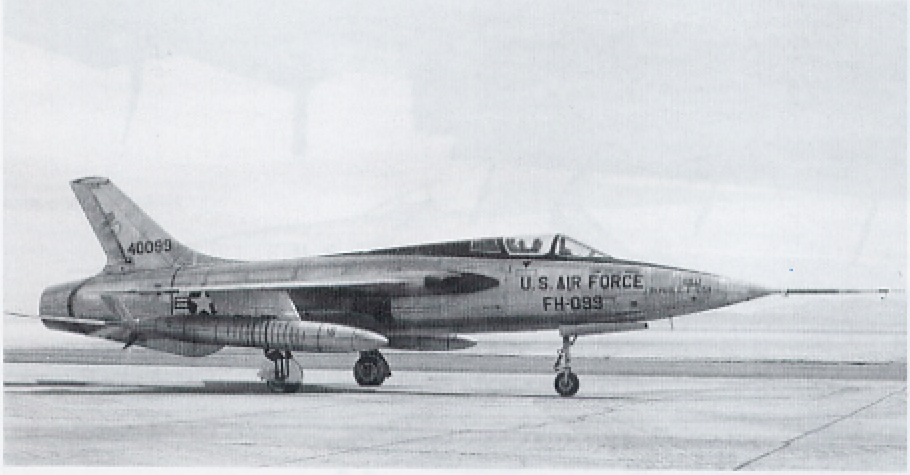
In service with the USAF and other nations the RF-84 proved to be a capable reconnaissance aircraft with a reputation of being slightly lively when manoeuvring. As the basic concept appeared sound Republic embarked on a private venture development of the Thunderstreak. The project soon gained a designation, Advanced Project No.63 - Fighter Bomber Experimental.

Above: Complete with centreline baggage pod this unidentified F-105D undergoes post flight maintenance. (Alan W.Hall)

The airframe still featured the swept wings, mid-fin mounted tailplane and wing root intakes associated with the earlier design. Changes planned were mainly under the skin and concerned the powerplant and weaponry. The engine proposed for the AP-63-FBX, as it had become known, was the new Allison J71 which was rated at 14,500 lbs.st with afterburner engaged. This theoretically meant that the AP-63-FBX would have a top speed of 800kts at 35, 000 feet.



54-0099 was the second prototype YF-105A built by Republic Aircraft Corporation. As this was one of the earliest built aircraft the area rule theory was not applied therefore performance suffered as a consequence. (via Dennis R Jenkins)



The second prototype was used mainly for aerodynamic trials work hence no radar was installed. In this shot it is undertaking release trials for the underwing fuel tanks.

Weaponry was limited internally in the incorporated bomb bay to a pair of 1,000 lbs conventional iron bombs or a single 'special weapon' or nuclear store with a gross weight of approximately 3,000 lbs. Further conventional bombs were allocated to underwing pylons whilst for self-defence it was intended to install four .50 calibre machine guns in the wing roots.

In a similar manner to all new aircraft designs, that of the AP-63-FBX underwent various permutations before Republic settled on one particular layout. Some of the ideas considered included powering the airframe with a pair of the Allison turbojets which would have lifted the top speed to over Mach 1.

Once all ideas had been studied and incorporated or discarded as required, what emerged in the document being prepared for the USAF was a large single-seater powered by the Pratt and Whitney J75 twin spool axial turbofan.

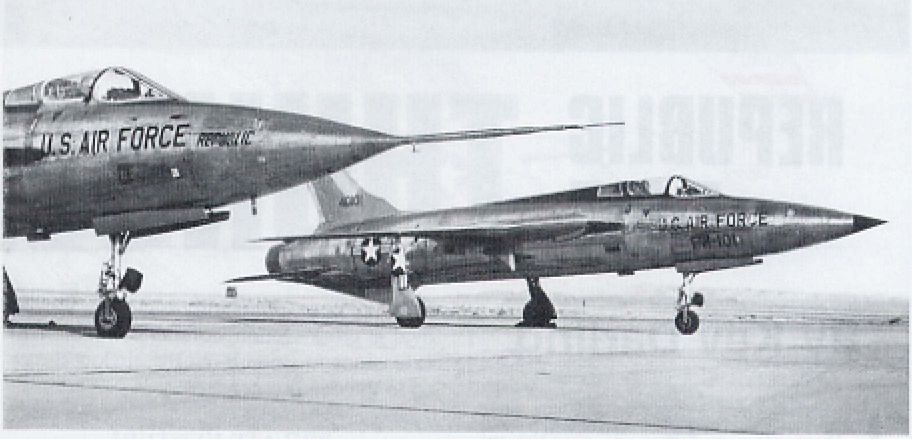
During May 1952 Republic Aircraft sent their proposal document to the Pentagon where it was studied in depth by the Air Force Aircraft and Weapons Board. The aircraft they found on the sheets before them bore a resemblance to the earlier RF-84 although the fuselage was some ten feet longer than that of its predecessor. The proposed powerplant was the Pratt and Whitney offering, still at its YJ75 development stage with a projected 23,000 lbs st of thrust in full afterburner whilst weapons control and delivery would be the province of the newly manufactured MA-8 Fire Control System.

The technical specification of the AP-63-FBX were a length of 62 ft with a wingspan of 35 ft, slightly smaller than that of the F-84 series. The wing however retained the 45 degree sweep of the original although the wing itself was designed to use the NACA 65A cross section which was thinner than that of the F-84 aircraft.

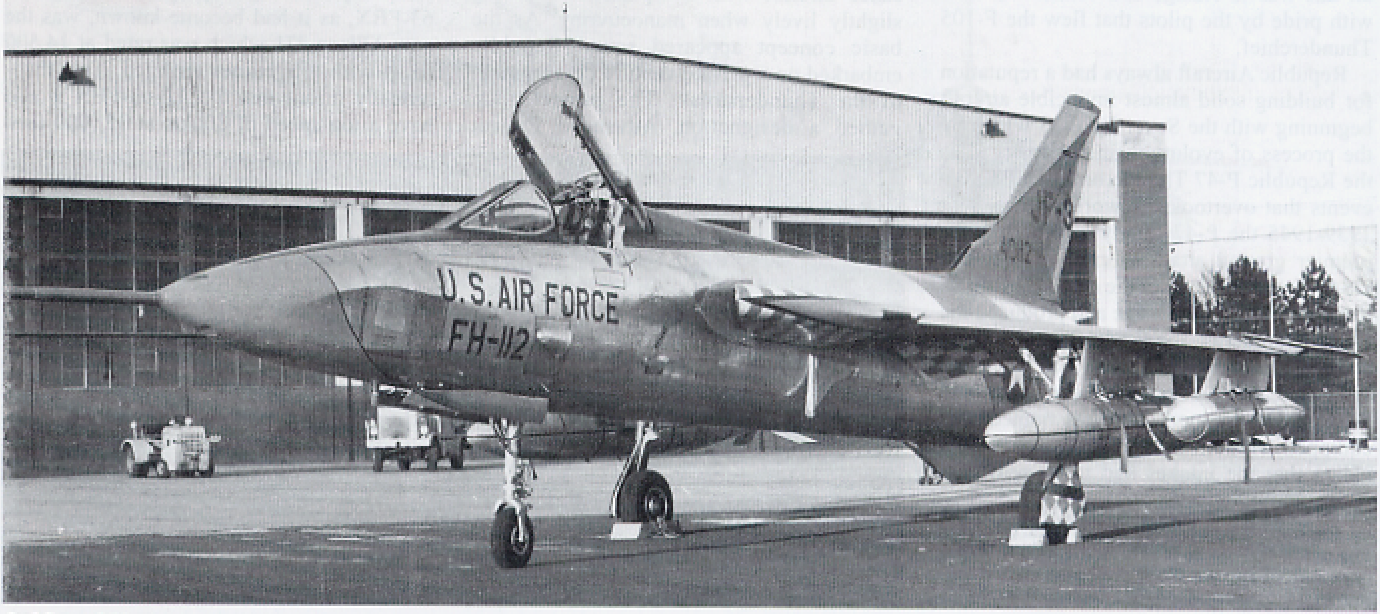
To ensure positive control it was the intention of Republic to install the General Electric FC-5 Flight Control System which was linked to the full span leading edge flaps, the trailing edge Fowler flaps and spoilerons on the wing upper surfaces which were capable of acting as lift dumps and of providing roll control instead of conventional ailerons.

The intakes and associated ducting were to be located at the junction of the wing and fuselage and, as designed, had straight leading edges of a very thin cross section and were fixed. The jet pipe assembly for the new fighter however had moveable leaves which altered in size dependant on the thrust.

The internal weapons bay was retained and was deemed capable of carrying a single conventional weapon up to a maximum of 2,000 lbs, a single special weapon or a demountable 350 US gallon fuel tank. To augment the rather paltry weapons bay load Republic provided four hardpoints, two per wing, that could carry a reasonable amount of ordinance. The permutations included four 1,000 lb bombs, two 1,000 lb bombs



Above: This aircraft is the second YF-105B and as such is close to production standard as the radome nose cone shows. Below: Identified clearly by the tail code 'JF-3' is 54-0112 which was built as one of three RF-105B's as the nose shape reveals. This version was never developed further and the three were used for development work. (via Dennis R Jenkins)



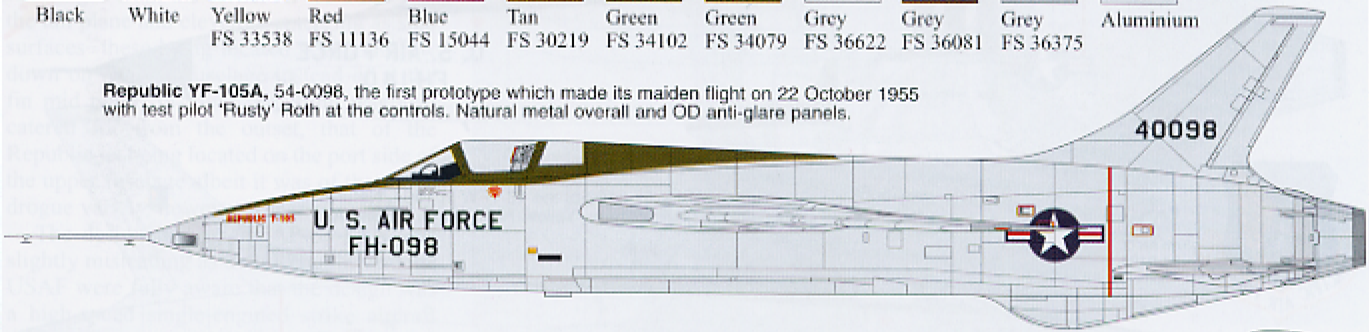
Republic F-105 Thunderchief camouflage and markings

Drawings by David Howley

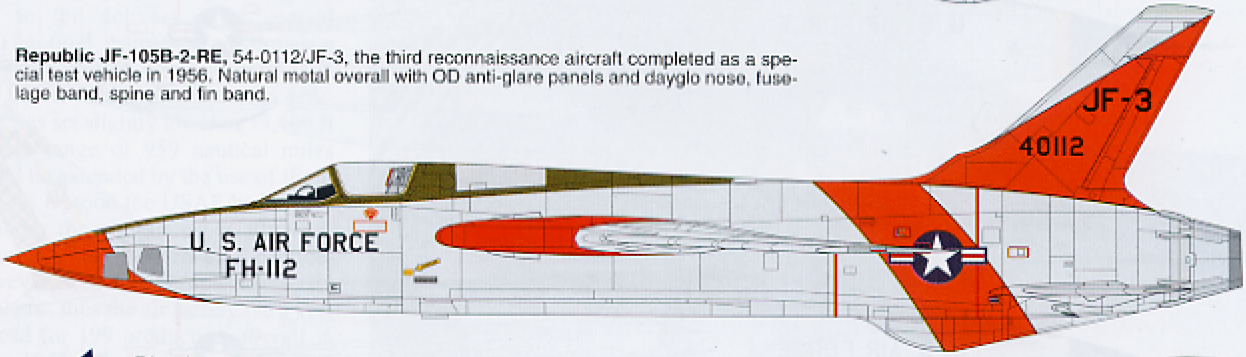
F-105 THUNDERCHIEF COLOUR KEY

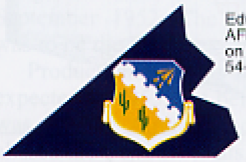
Colour	FS number
Black	
White	
Yellow	FS 33538
Red	FS 11136
Blue	FS 15044
Tan	FS 30219
Green	FS 34102
Green	FS 34079
Grey	FS 36622
Grey	FS 36081
Grey	FS 36375
Aluminium	

Republic YF-105A, 54-0098, the first prototype which made its maiden flight on 22 October 1955 with test pilot 'Rusty' Roth at the controls. Natural metal overall and OD anti-glare panels.



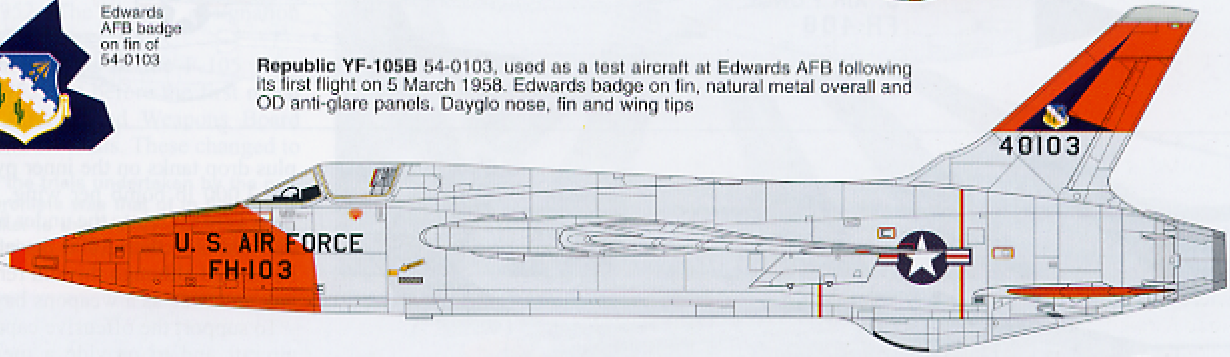
Republic JF-105B-2-RE, 54-0112/JF-3, the third reconnaissance aircraft completed as a special test vehicle in 1956. Natural metal overall with OD anti-glare panels and dayglo nose, fuselage band, spine and fin band.



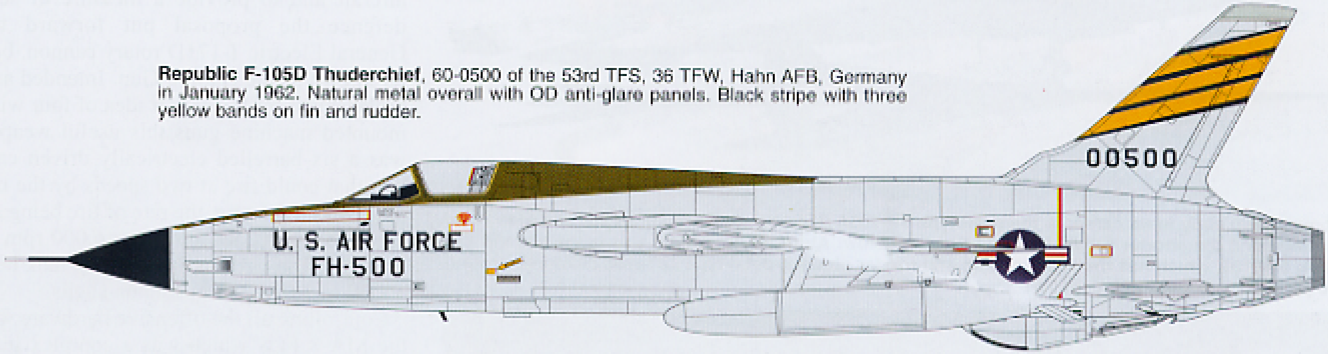


Edwards AFB badge on fin of 54-0103

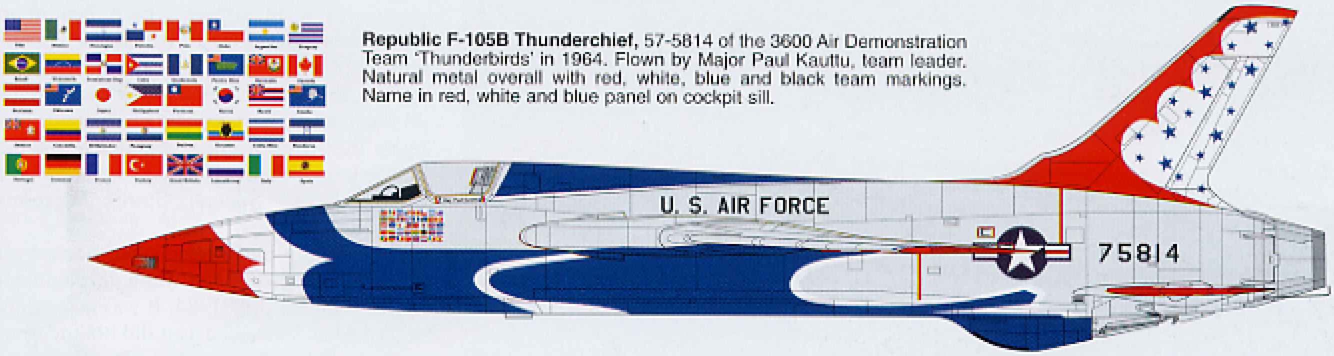
Republic YF-105B 54-0103, used as a test aircraft at Edwards AFB following its first flight on 5 March 1958. Edwards badge on fin, natural metal overall and OD anti-glare panels. Dayglo nose, fin and wing tips

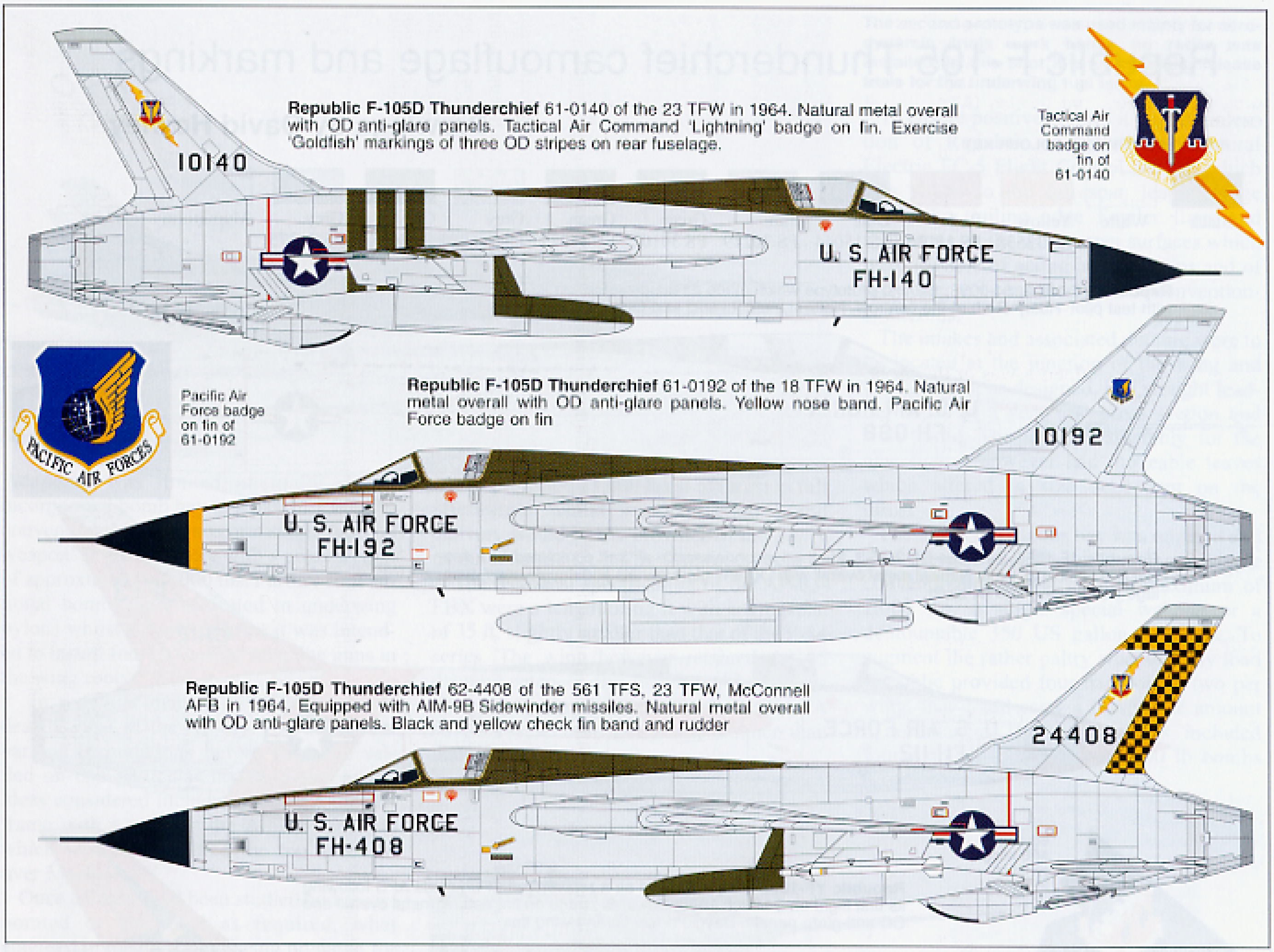


Republic F-105D Thuderchief, 60-0500 of the 53rd TFS, 36 TFW, Hahn AFB, Germany in January 1962. Natural metal overall with OD anti-glare panels. Black stripe with three yellow bands on fin and rudder.



Republic F-105B Thunderchief, 57-5814 of the 3600 Air Demonstration Team 'Thunderbirds' in 1964. Flown by Major Paul Kauttu, team leader. Natural metal overall with red, white, blue and black team markings. Name in red, white and blue panel on cockpit sill.





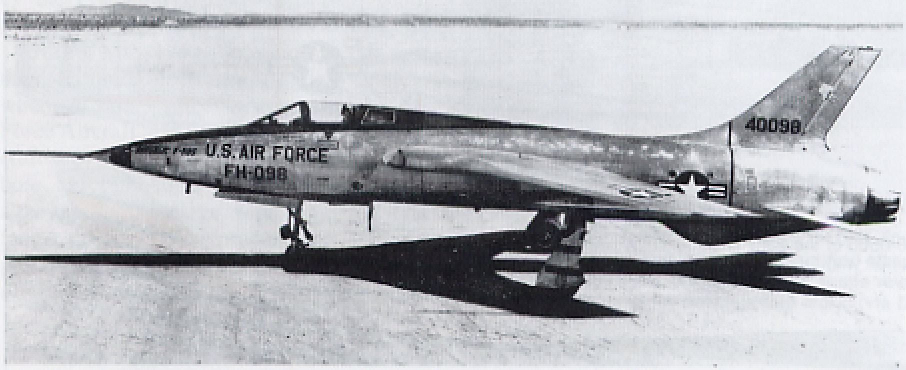
Republic F-105D Thunderchief 61-0140 of the 23 TFW in 1964. Natural metal overall with OD anti-glare panels. Tactical Air Command 'Lightning' badge on fin. Exercise 'Goldfish' markings of three OD stripes on rear fuselage.

Tactical Air Command badge on fin of 61-0140

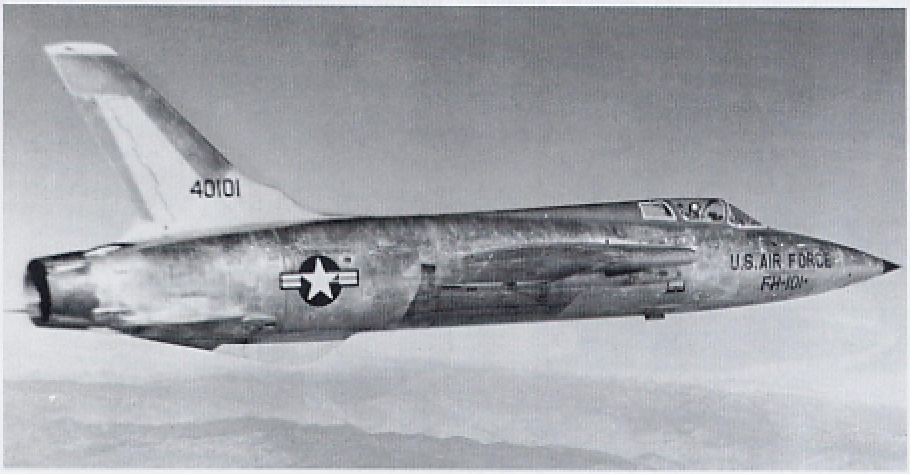
Pacific Air Force badge on fin of 61-0192

Republic F-105D Thunderchief 61-0192 of the 18 TFW in 1964. Natural metal overall with OD anti-glare panels. Yellow nose band. Pacific Air Force badge on fin

Republic F-105D Thunderchief 62-4408 of the 561 TFS, 23 TFW, McConnell AFB in 1964. Equipped with AIM-9B Sidewinder missiles. Natural metal overall with OD anti-glare panels. Black and yellow check fin band and rudder



Above: Seen early in its career is the prototype YF-105A 54-0098, which featured the non area ruled fuselage and the shorter original fin and rudder. Below: Airborne on a flight test is the second YF-105A, 54-0101, which has the increased fin and rudder plus the petal type airbakes clustered around the jet pipe. (via Dennis R Jenkins)



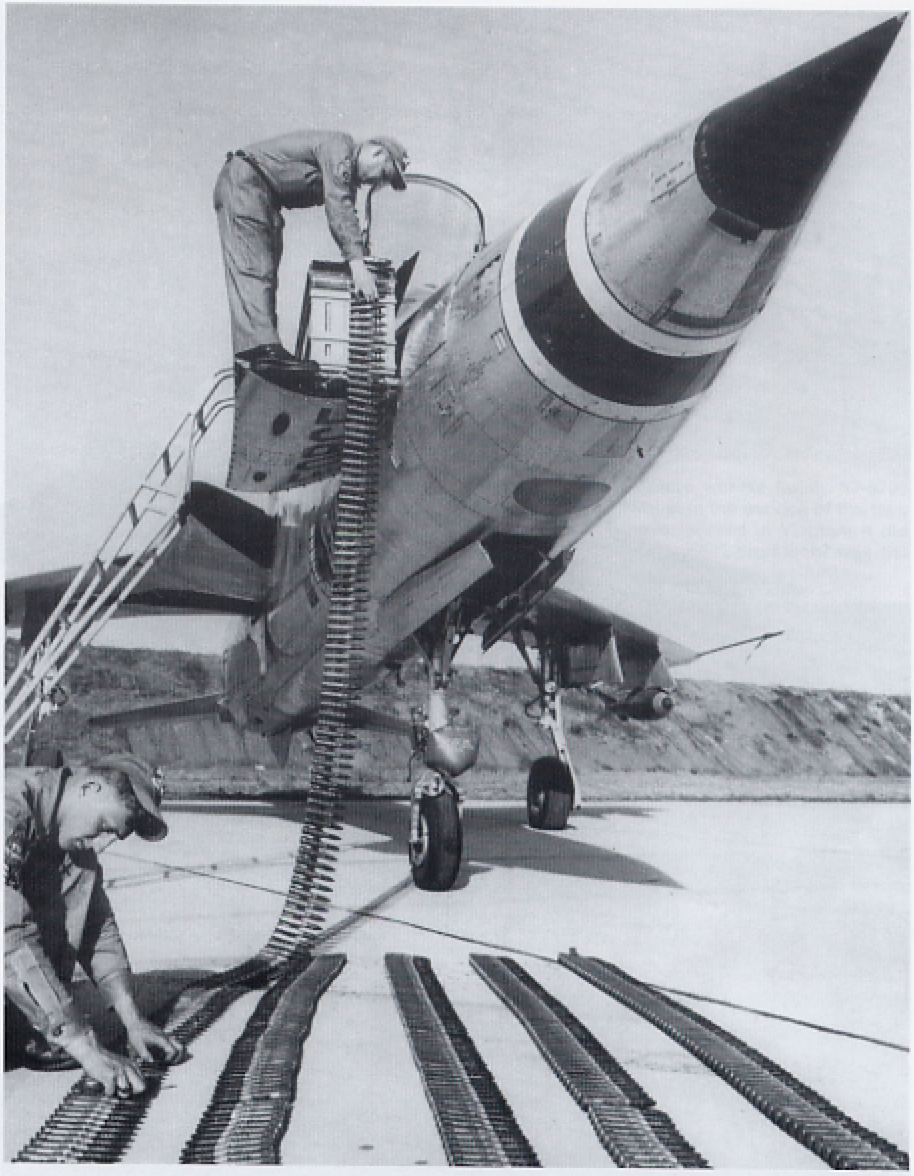
plus drop tanks on the inner pylons or a single 3,000 lb bomb per wing. Extra mountings were built into the under fuselage which allowed a further 2,000 lbs of weaponry to be carried although this did render the bomb bay unusable as a weapons bay.

To support the offensive capabilities of the aircraft and to provide a measure of self-defence the proposal put forward the General Electric T-171D rotary cannon, better known as the Gatling Gun. Intended as a replacement for the earlier idea of four wing mounted machine guns this useful weapon was a six-barrelled electrically driven cannon that could fire at two speeds by the use of a cockpit selector, the rate of fire being set at 3,000 rounds per minute or 6,000 rpm as required. The circular ammunition tank held a total of 1,028 20mm cannon shells.

Controlling all the offensive hardware was the MA-8 FCS which was a complex integration of many separate parts central to which was the K-19 modified gun sight system coupled to an AN/APG-31 radar ranging system, this in turn being based upon the E-34 radar setup. Bomb release was controlled by an E-30 Toss Bomb Computer whilst the delivery of special weapons was in the care of the T-145 Special Stores Weapons Release System.

Structurally the fuselage that housed all this advanced electronics was a development of that built for the RF-84. It was accurately described as slab sided as it did not incorporate any form of area ruling thus the 'coke bottle' or 'wasp waist' was not present

During acceptance trials all the various versions of the Thunderchief underwent weapons handling. In the foreground are the shells for the nose mounted Gatling gun whilst the outboard wing pylons sport iron bombs. (Alan W. Hall Collection)



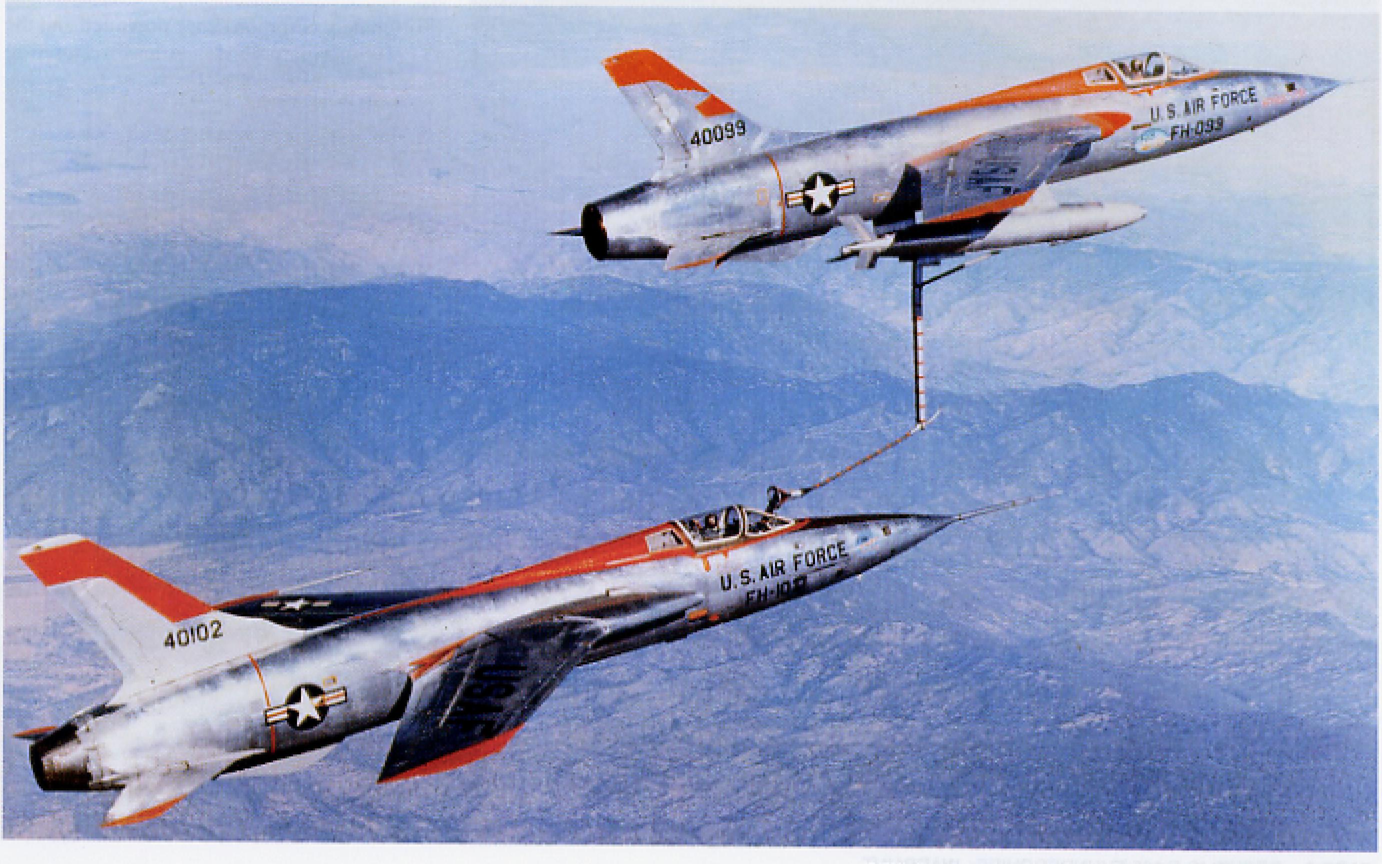
although this improvement would appear later.

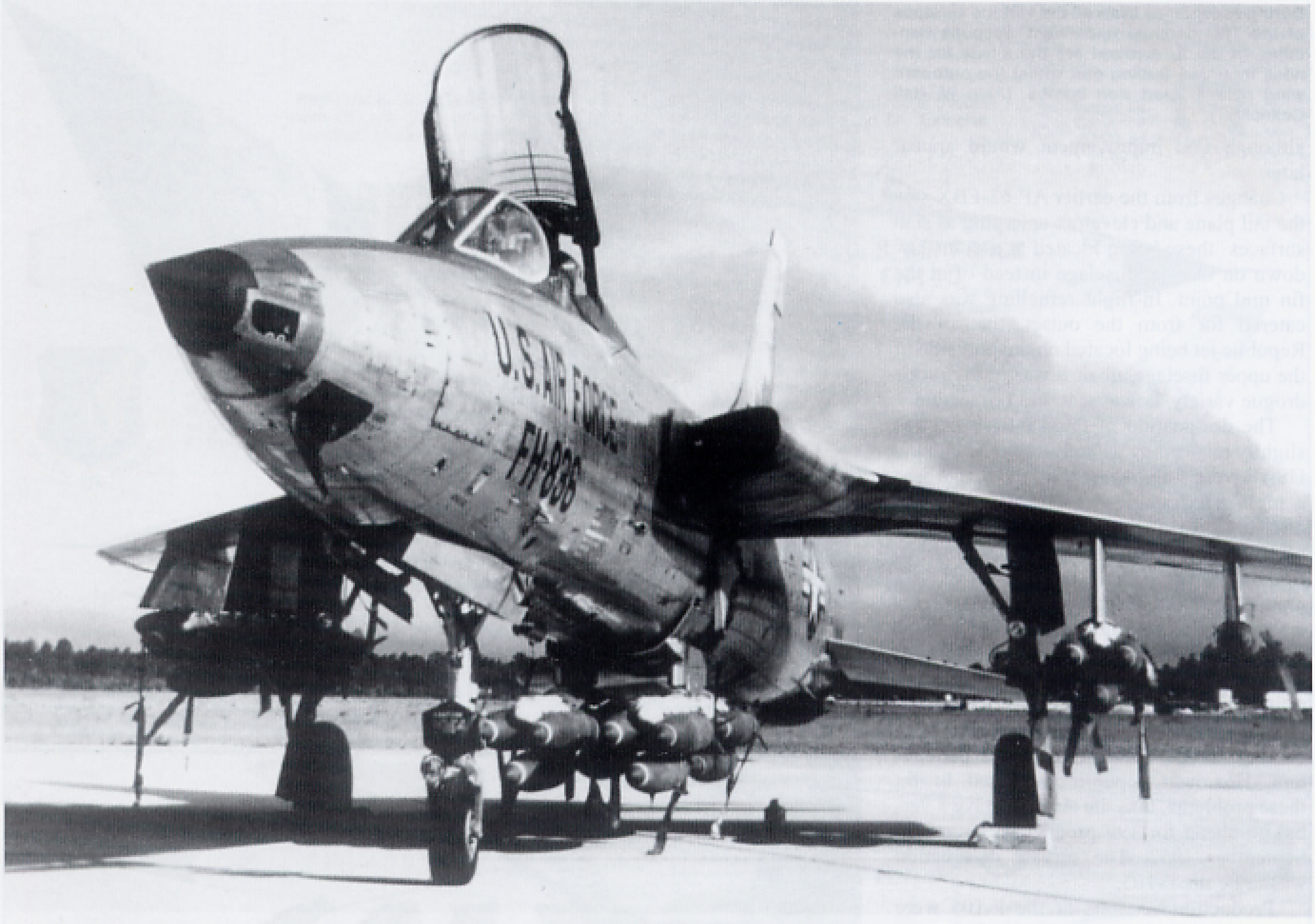
Changes from the earlier AP-63-FBX saw the tail plane and elevators emerging as slab surfaces these being located at a point low down on the rear fuselage instead of at the fin mid point. In-flight refuelling was also catered for from the outset, that of the Republic jet being located on the port side of the upper fuselage albeit it was of the probe drogue variety, however it was retractable.

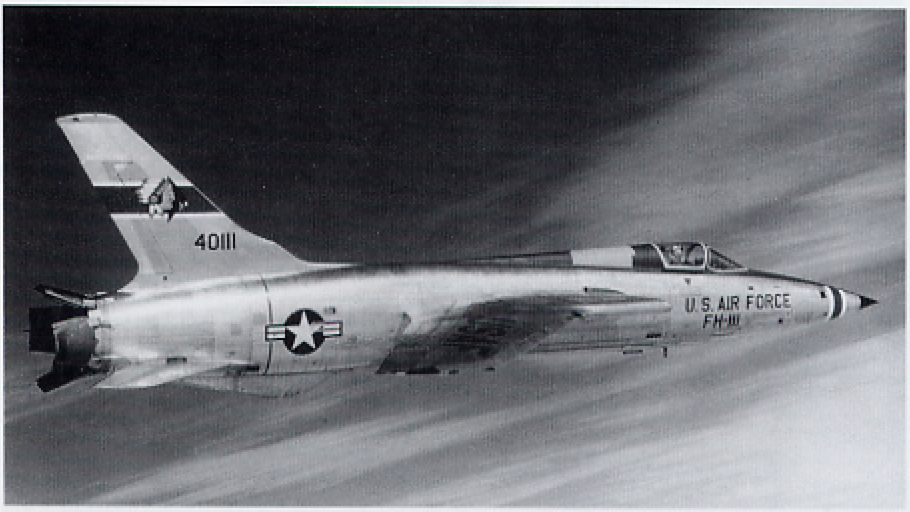
The designation of the AP-63-FBX was slightly misleading as both Republic and the USAF were fully aware that the design was a high-speed single-engined strike aircraft dedicated to the delivery of a special weapon. The final estimated performance figures for the project were given as 765 mph at 35,000 ft although the design service ceiling was set slightly lower at 33,400 ft with a basic range of 959 nautical miles which could be extended by the use of flight refuelling. As it stood the USAF had mixed feelings about the aircraft especially concerning some of the performance parameters. However Republic promised to fix these problems, thus the air force gave a verbal go ahead for 199 production aircraft in September 1952. The service designation was to be the F-105.

Production versions of the F-105 were expected in 1955, but before the first metal was cut the Aircraft and Weapons Board altered the Contract totals. These changed to

Below: One of the trials undertaken by the prototype Thunderchiefs was that of in flight refuelling. The tanker is the first YF-105A, 54-0099, whilst the receiver is YF-105B, 54-0102. (via USAF)







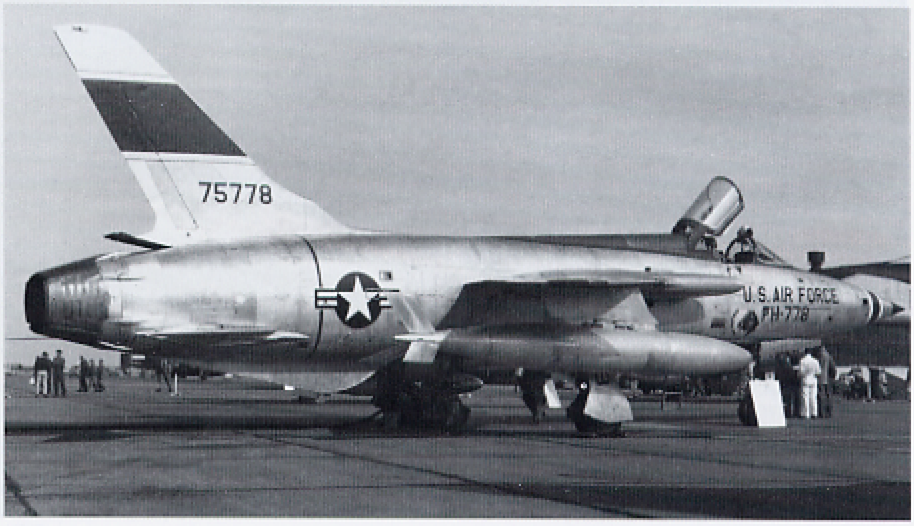
Above: Before joining the operational air force F-105B, 57-5836, was used for bomb carriage trials as this view shows. It has iron bombs on all four wing pylons and a pair of MERs on the centre line. Its later career was with the New Jersey Air Guard. Left: With its airbrakes partially deployed F-105B, 54-0111, complete with Thunderchief badge on the fin poses for the camera. (via Dennis R Jenkins)

46 airframes that comprised 37 special weapons strike fighters with the remainder being optimised for the high speed reconnaissance role as the RF-105.

PRODUCTION BEGINS

The first vestiges of the F-105 appeared in late 1953 when Republic's engineering mock up was revealed for the first time. Following this milestone came yet a further change to the production requirement which was reduced to 15 aircraft in February 1954. Later that year a further reduction in the production requirement was reduced to three. Fortunately common sense prevailed and the YF-105 programme was at least restored to the 15 aircraft level in February 1955. This comprised two YF-105s, four YF-105Bs, six production F-105Bs plus three YRF-105s. This was later revised to two YF-105s, ten F-105Bs and three RF-105s.

The RF-105 model was designed to carry its reconnaissance equipment in the fuselage nose. The five cameras intended to fit in this space would have replaced the MA-8 FCS,



57-5778 was an F-105B of the 355th TFS complete with a Thunderchief on the nose and green and white bands on the tail, nose and wings. Note the open brake chute door. (via Dennis R Jenkins)

the Gatling Gun and its ammunition tank. The RF-105 was intended to have a defensive capability in the shape of a pair of M39 20-mm cannon carried in removable pods affixed to the lower fuselage. Three prototypes were constructed complete with camera noses. However not long after roll out the programme was cancelled as the USAF preferred the RF-101 as its dedicated platform. The three completed aircraft were redesignated as the JF-105 and found use in the Thunderchief development programme.

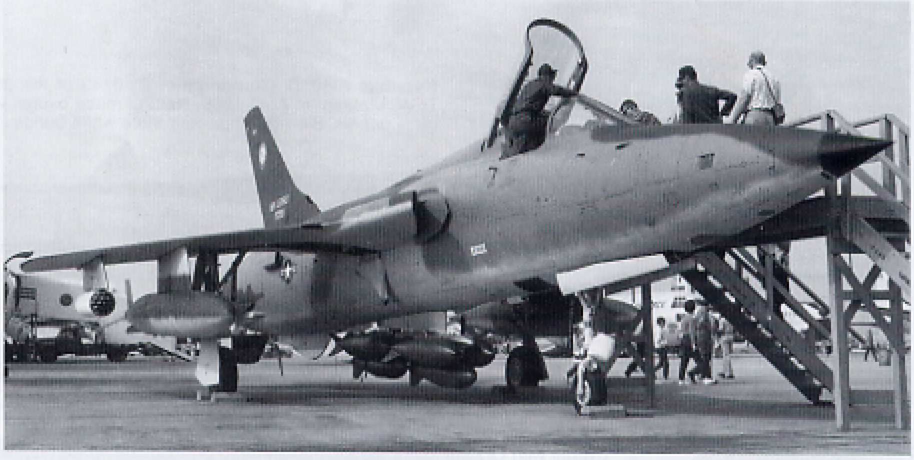
Although Republic were building the prototypes to the laid down time scale the engine manufacturer Pratt & Whitney was experiencing problems with the intended powerplant, the J75.

To enable the prototypes to fly on time it was proposed to install the same company's J57-P-25 engine although this was only capable of generating a maximum thrust of 15,000 lbs.st.

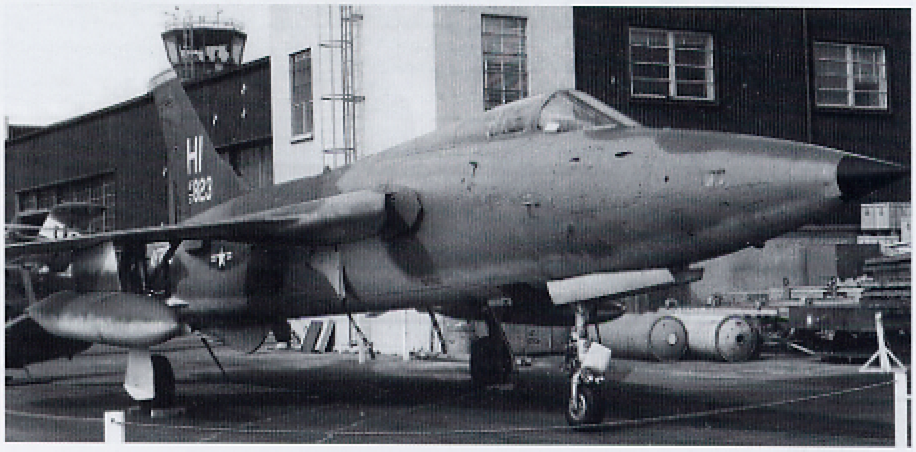
On 22 October 1955 Republic's Chief Test Pilot 'Rusty' Roth lifted the prototype YF-105, 54-0098, from the runway at Edwards Flight Test Centre. After some 45 minutes the first prototype returned to the runway after successfully breaking Mach.1 on its first flight.

FLIGHT TESTING MISHAPS UNDERCARRIAGE FAILURE

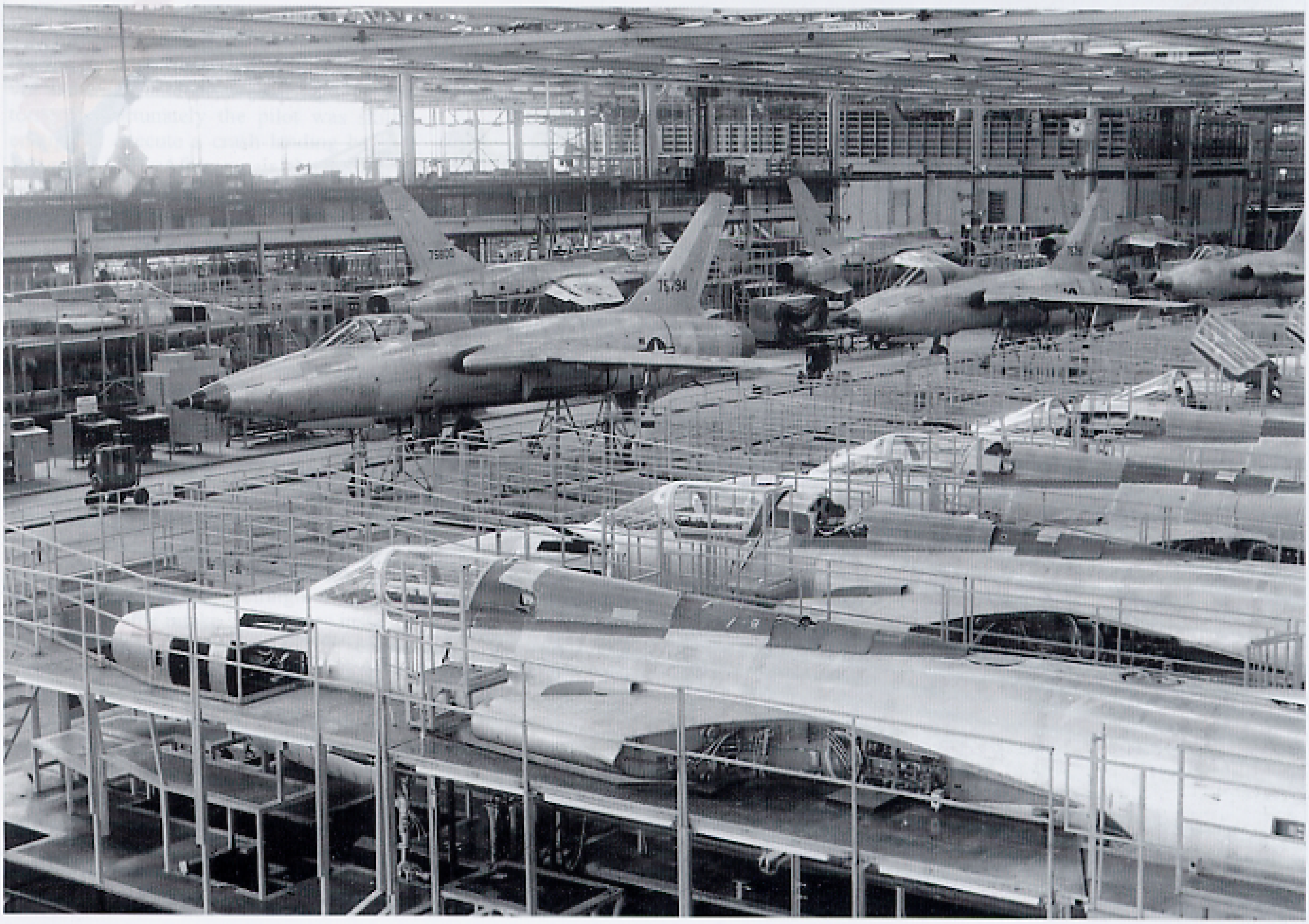
During the following two months the YF-105 was to experience a series of mishaps. The first incident saw the right undercar-

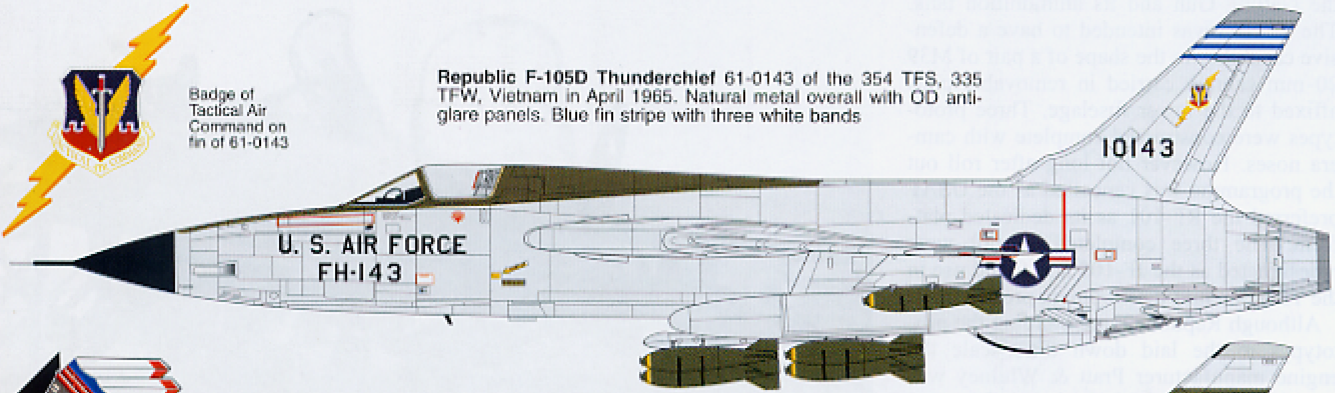


Above: In the days of camouflage the F-105B also appeared in this more warlike finish. 57-5793 sports bombs on the centreline with rocket pods on the outer pylons whilst in the service of the New Jersey ANG. (Alan W Hall Collection) Below: Although the F-105B never served in Vietnam it did receive some of the modifications applied to the 'D' model. One of the most prominent was the intakes on the rear fuselage needed to improve afterburner cooling. (Alan W Hall Collection)



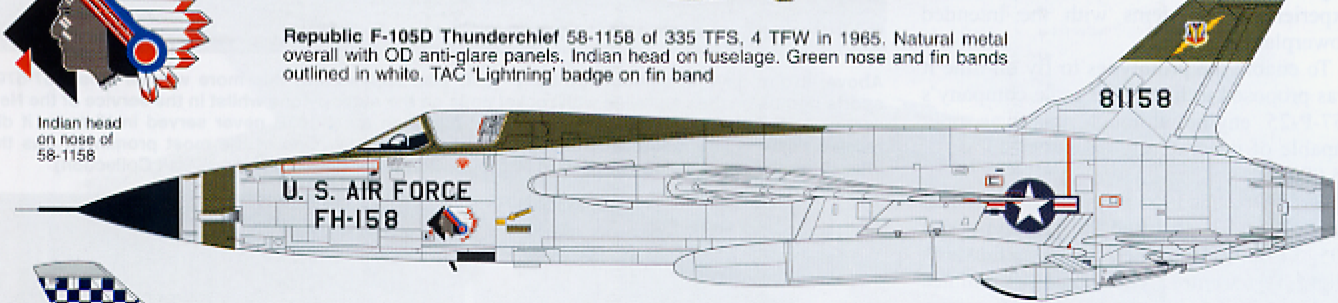
This view of the Republic plant at Farmingdale shows the main production batch of F-105B's under construction. (via Dennis R Jenkins)





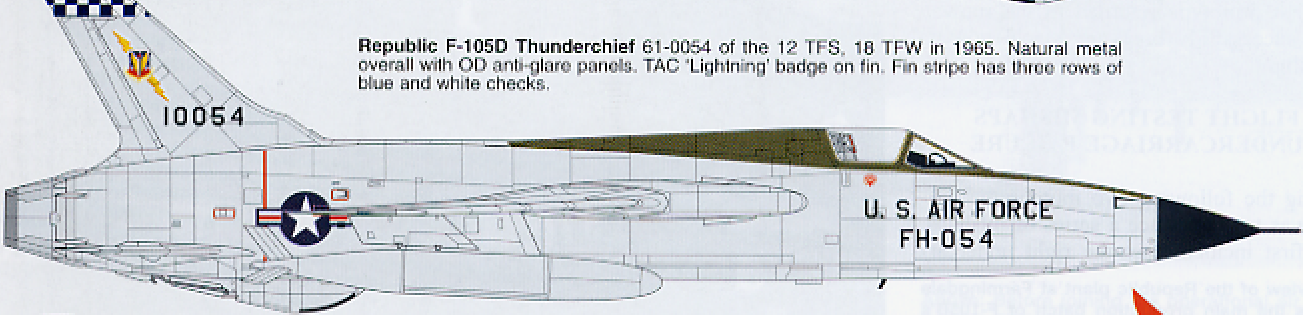
Badge of Tactical Air Command on fin of 61-0143

Republic F-105D Thunderchief 61-0143 of the 354 TFS, 335 TFW, Vietnam in April 1965. Natural metal overall with OD anti-glare panels. Blue fin stripe with three white bands

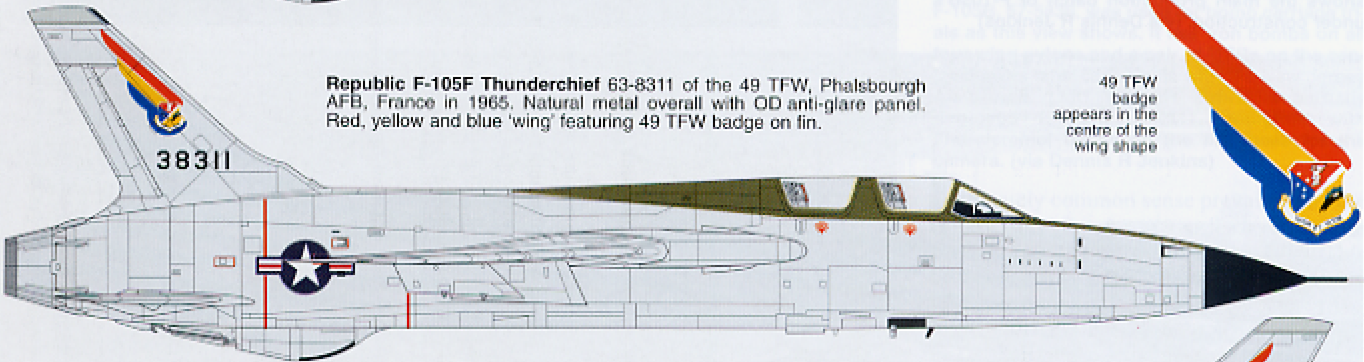


Republic F-105D Thunderchief 58-1158 of 335 TFS, 4 TFW in 1965. Natural metal overall with OD anti-glare panels. Indian head on fuselage. Green nose and fin bands outlined in white. TAC 'Lightning' badge on fin band

Indian head on nose of 58-1158

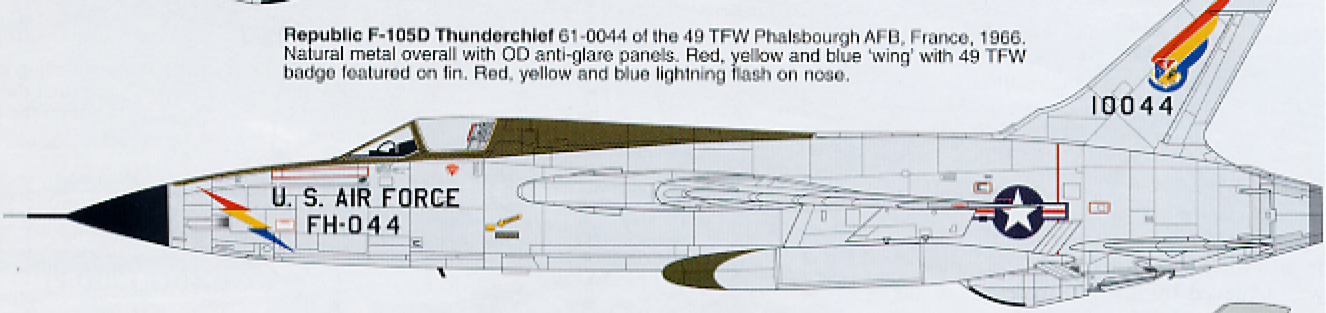


Republic F-105D Thunderchief 61-0054 of the 12 TFS, 18 TFW in 1965. Natural metal overall with OD anti-glare panels. TAC 'Lightning' badge on fin. Fin stripe has three rows of blue and white checks.

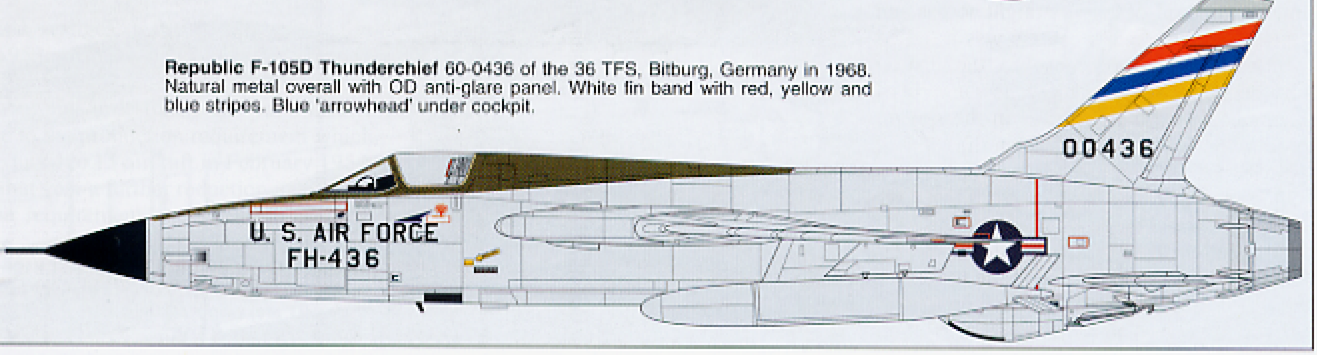


Republic F-105F Thunderchief 63-8311 of the 49 TFW, Phalsbourgh AFB, France in 1965. Natural metal overall with OD anti-glare panel. Red, yellow and blue 'wing' featuring 49 TFW badge on fin.

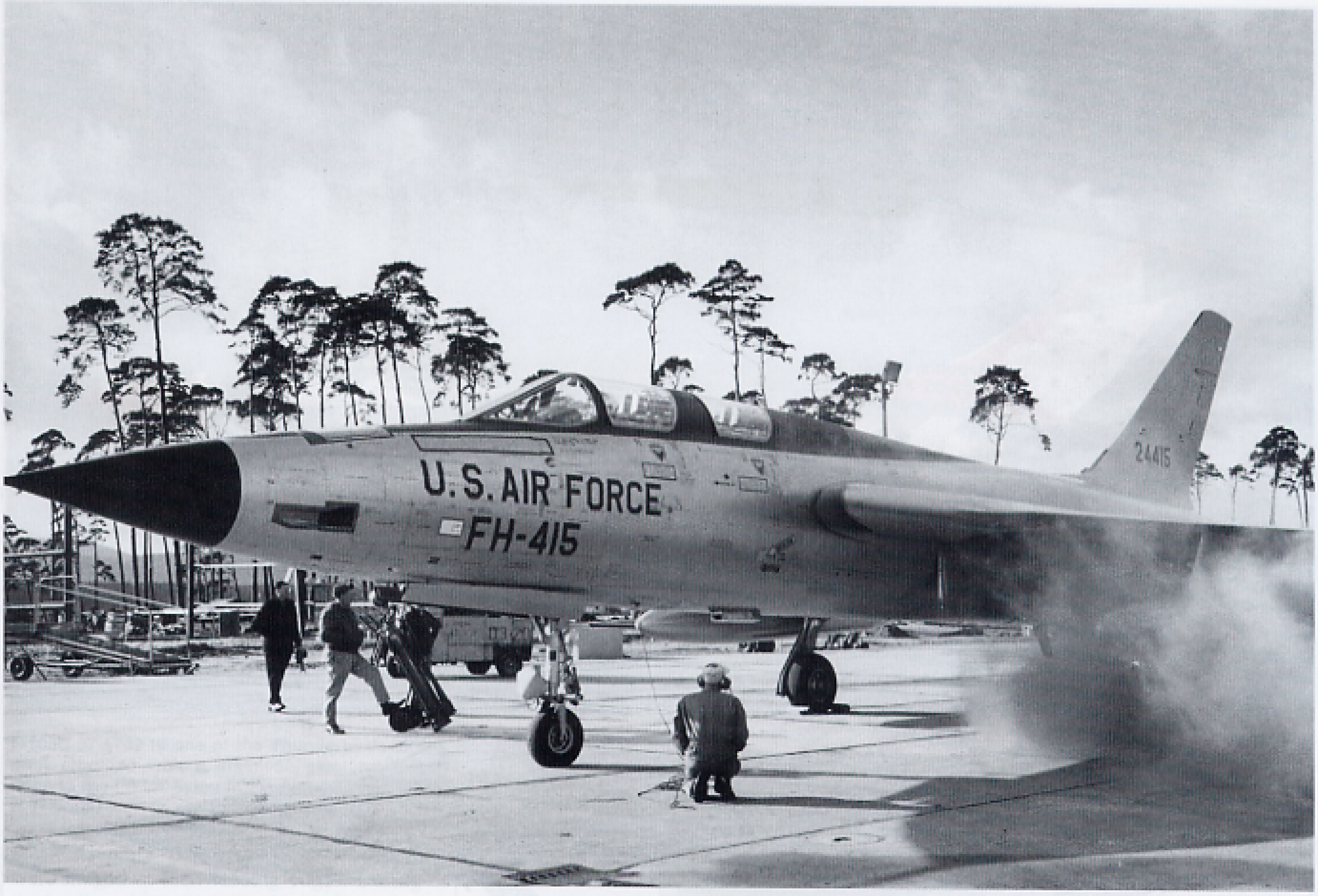
49 TFW badge appears in the centre of the wing shape



Republic F-105D Thunderchief 61-0044 of the 49 TFW Phalsbourgh AFB, France, 1966. Natural metal overall with OD anti-glare panels. Red, yellow and blue 'wing' with 49 TFW badge featured on fin. Red, yellow and blue lightning flash on nose.



Republic F-105D Thunderchief 60-0436 of the 36 TFS, Bitburg, Germany in 1968. Natural metal overall with OD anti-glare panel. White fin band with red, yellow and blue stripes. Blue 'arrowhead' under cockpit.

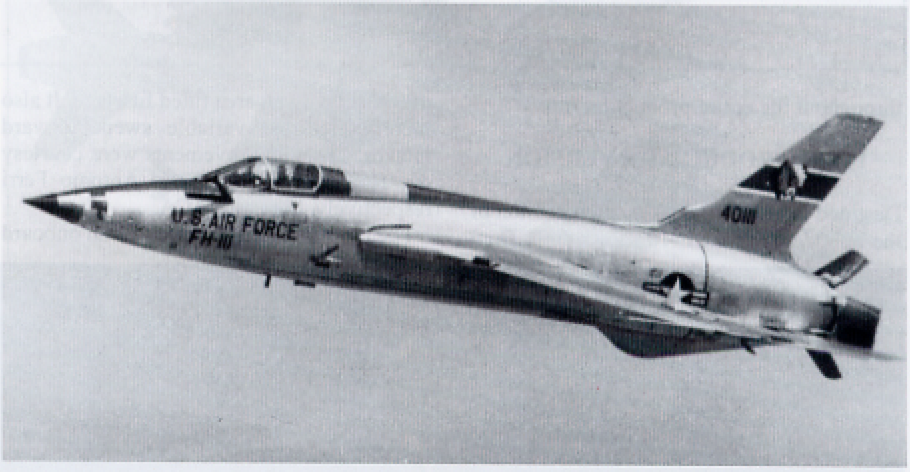


Bitburg-based F-105F 62-4415 spews out vast quantities of smoke on start up which threatens to engulf the crew chief. It later served with the 388th TFW. (Alan W.Hall collection)

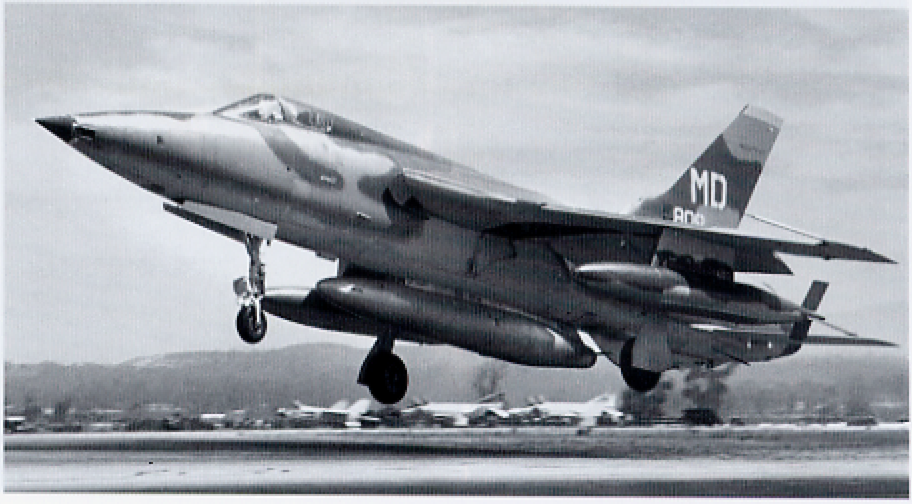
riage becoming unlocked in flight during a 5.5g turn at a speed of 550 knots. Such were the forces being generated by this manoeuvre that the extended undercarriage leg was torn off. Fortunately the pilot was skilful enough to execute a crash landing back at Edwards AFB. After repair the prototype returned to the flight test programme where a greater defect was found. This concerned the overall performance which was far below that specified by the USAF General Operational Requirement. Investigation in the wind tunnel revealed that the drag of the airframe was slowing the YF-105 down as the airflow failed to pass over the structure without disruption.

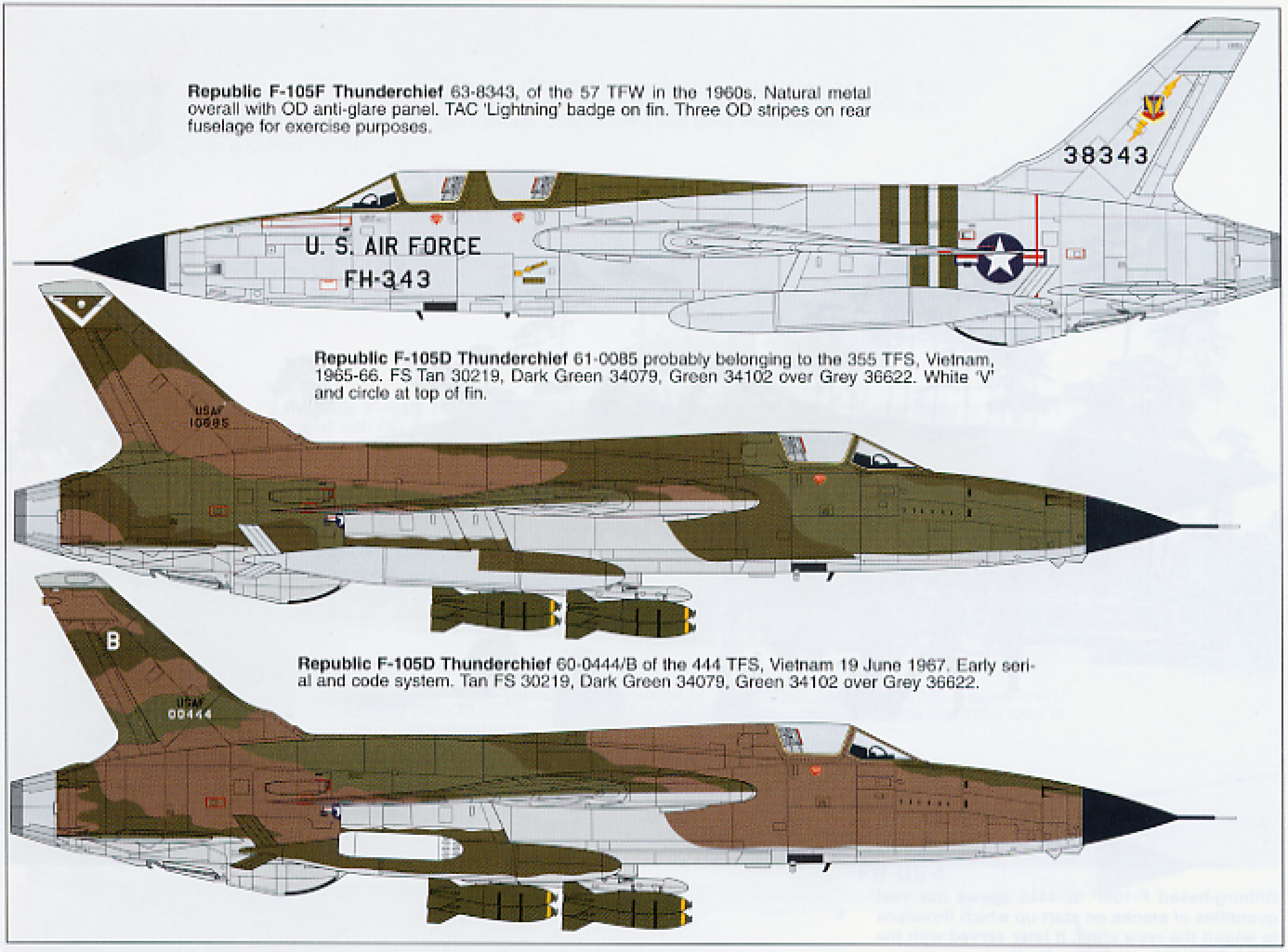
The answer was to apply area ruling to the whole fuselage which delayed the break away of the boundary layer. To achieve this the fuselage was redesigned to feature a 'wasp-waisted' or 'coke bottle' look. Improvements to the engine performance was achieved by the total redesign of the intakes. Instead of being straight across and fixed, a variable intake system was installed which moved in response to the engine throttle inputs. Before these new improvements could be implemented in the second prototype it had made its maiden flight on 28 January 1956.

The situation regarding the third airframe was entirely different as it was completely redesigned to incorporate all the improvements. With the appearance of the third YF-105 the design of the production aircraft was set and would remain virtually unchanged



Above: F-105B, 54-0111, poses with all its four airbrake petals fully open and its refuelling probe extended. Below: Wearing the 'MD' codes of the 23rd TFW this F-105B prepares to touch down at McConnell AFB.The aircraft has a centreline 600 gallons fuel tank with a pair of tanks on the inner pylons. (via Dennis R Jenkins)





Republic F-105F Thunderchief 63-8343, of the 57 TFW in the 1960s. Natural metal overall with OD anti-glare panel. TAC 'Lightning' badge on fin. Three OD stripes on rear fuselage for exercise purposes.

Republic F-105D Thunderchief 61-0085 probably belonging to the 355 TFS, Vietnam, 1965-66. FS Tan 30219, Dark Green 34079, Green 34102 over Grey 36622. White 'V' and circle at top of fin.

Republic F-105D Thunderchief 60-0444/B of the 444 TFS, Vietnam 19 June 1967. Early serial and code system. Tan FS 30219, Dark Green 34079, Green 34102 over Grey 36622.

throughout the entire production run.

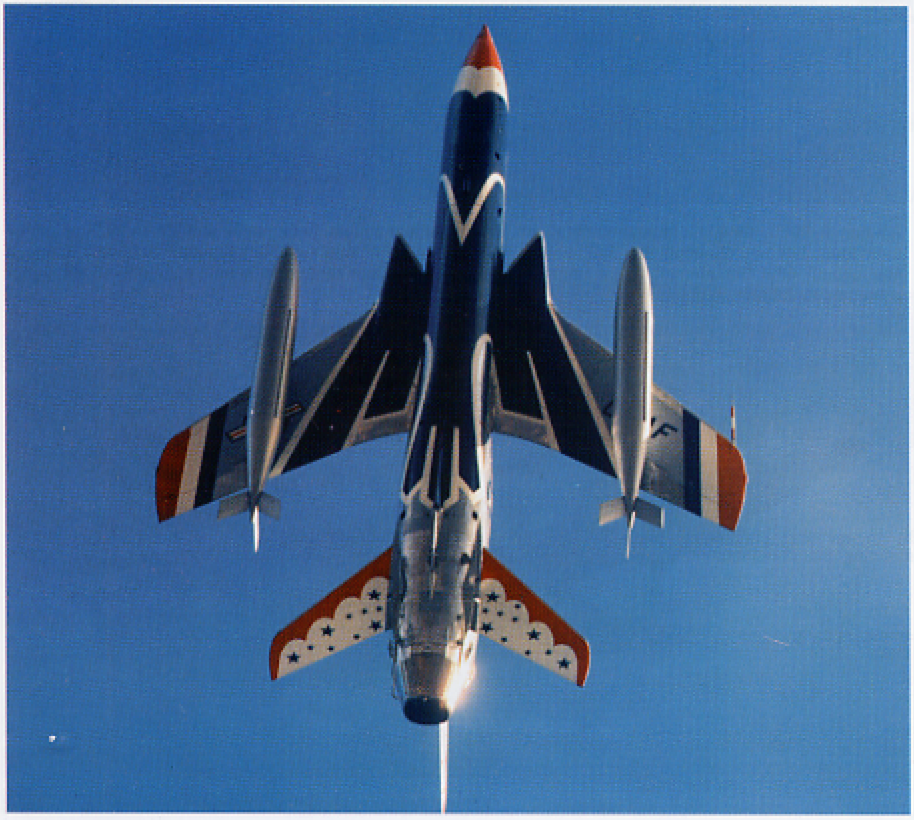
FIRST PRODUCTION VERSION

Destined to be the first production version of the Thunderchief the F-105B was built from the outset with an area ruled fuselage. It also incorporated the variable swept forward intakes. These improvements were courtesy of Richard Whitcomb and Antonio Ferri respectively, both of NACA.

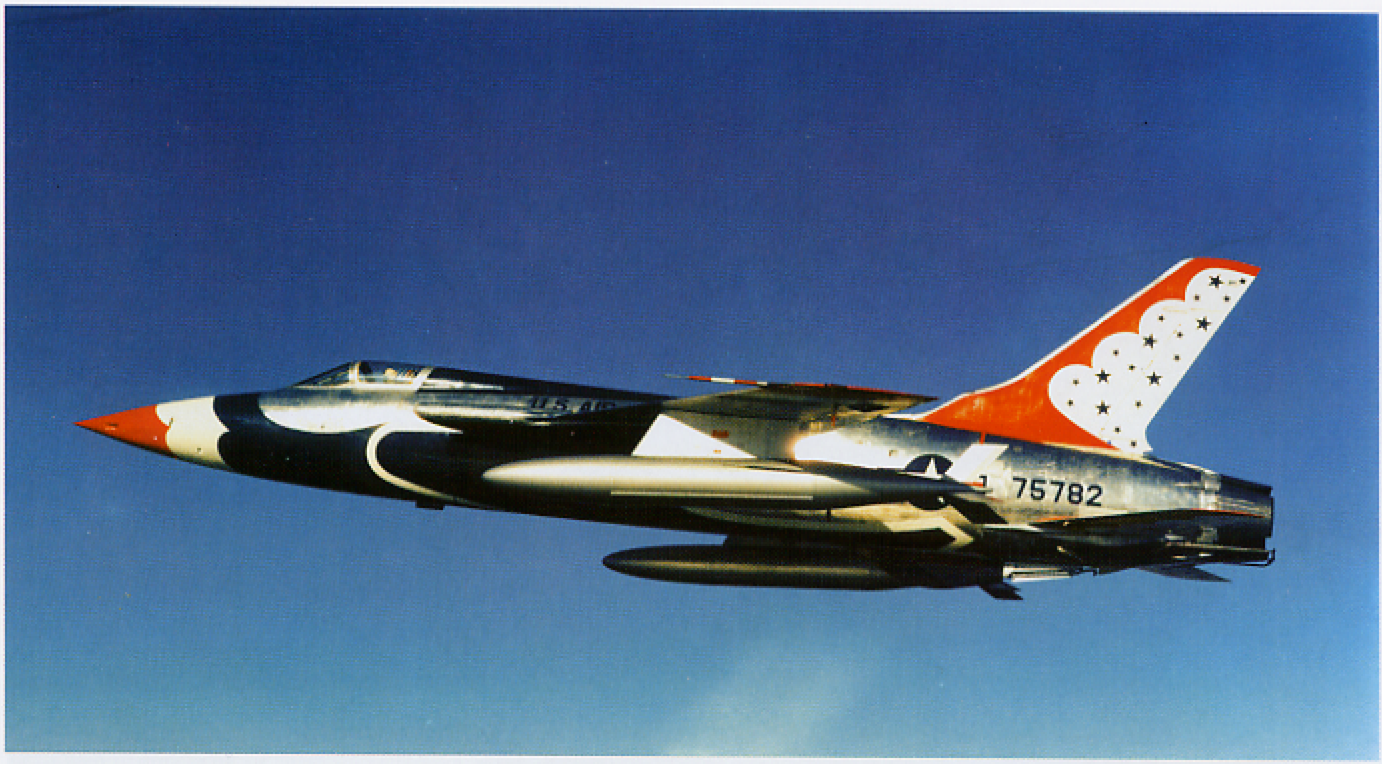
The intakes were controlled by an onboard computer which would finally allow the F-105 to achieve its intended top speed of Mach 1.5 although it was projected that this design feature would let the aircraft reach a top speed of Mach 2. Bendix was the manufacturer of the Central Air Data Computer which controlled the intake ramps. At slow speeds they were retracted to the fully open position, but as speed increased they extended to progressively reduce the size of the opening. Supporting the ramp system were a series of bleed air doors that opened to allow excess air to bleed away before it reached the compressor face thus allowing the engine to perform most efficiently.

In common with many fighters of the 1950s the rudder and fin assembly on the F-105B were found to suffer from flutter at high speeds. The answer was to increase the fin height by nearly two feet and to expand the dimensions of the rudder. As the fin was larger and slightly thicker Republic took the opportunity to incorporate a small ram air intake in the base. This fed cold air directly to the afterburner unit of the J75 engine.

This was another area in which the engineers had been ingenious. As there was no obvious point at which to install airbrakes without destabilising the aircraft the decision was taken to build them into the afterburner system. The original YF-105 had a fairly standard circular exhaust, however that of the F-105B consisted of a novel four-



The complicated finish applied to aircraft of the Thunderbirds Aerobatic team is exemplified here on this F-105B caught on a transit flight. (via Dennis R.Jenkins)



F-105B 57-5782 is one of the Thunderbirds aircraft modified with a stainless steel leading edge to the fin for flying in the slot. (via Dennis R.Jenkins)

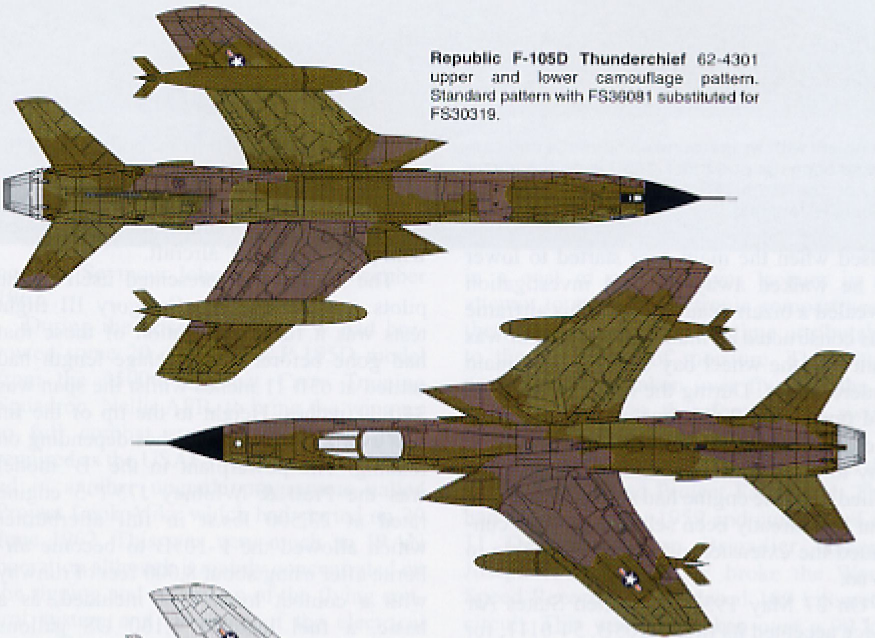
petal assembly, all of whose components were hinged at their leading edges. During the landing phase the two side petals extended to help slow the aircraft down, the all four petal mode being used only for, of all things, dive bombing.

The reason that the vertical panels were not used during landing was that the lower one had a ground clearance problem whilst the upper in the extended position would have blocked the release of the brake parachute.

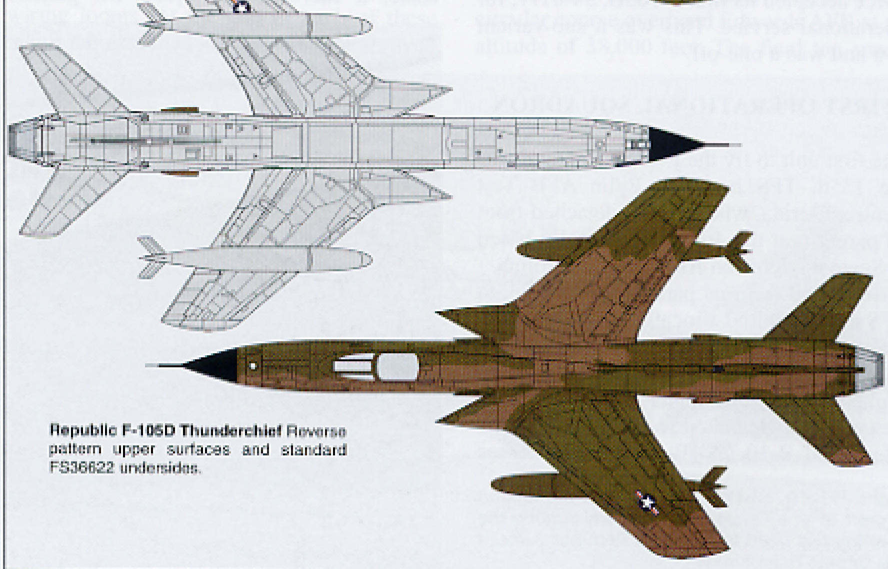
The heart of the redesigned F-105B was the all weather bombing system 306A. This comprised the MA-8 FCS, the Bendix CADC, the General Electric FC-5 Flight Control System complete with autopilot unit and the AN/APN-105 Doppler all weather navigation system, the latter being added to the specification in January 1957.

Such was the complexity of systems integration that in 1959 the USAF authorised Project Optimize that was intended to bring all the available F-105Bs up to the same engineering standard.

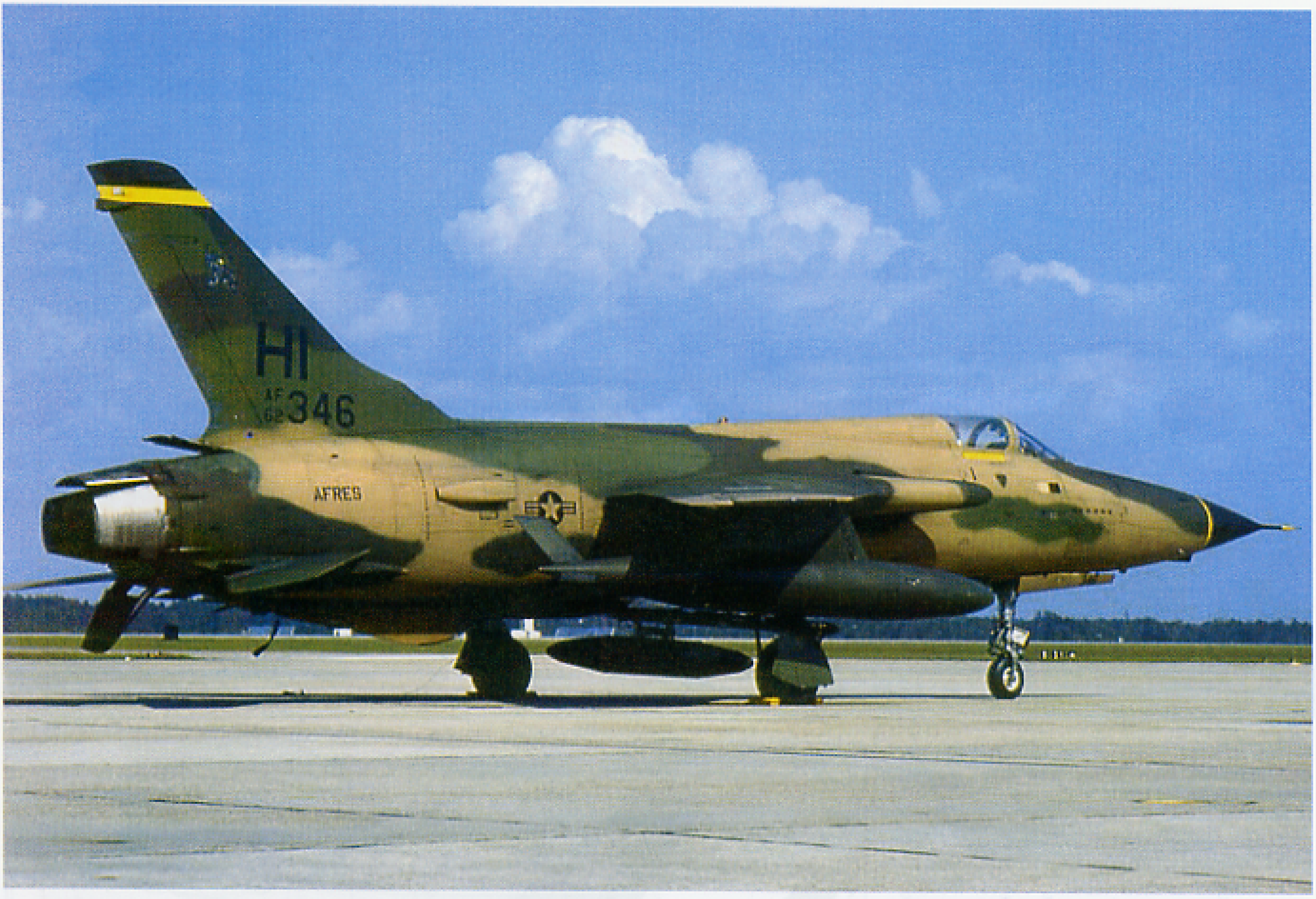
Before this standardisation attempt the first YF-105B, 54-0100, made its maiden flight on 26 May 1956 piloted by Test Pilot Hank Baird. After a successful first flight the YF-105B entered the test programme although this was not without incident. On an early flight the nose gear failed to lower successfully which left the pilot with no other option but to land on the main undercarriage legs before lowering the nose at the last possible moment. This was successfully accomplished, however it was subsequently wrecked when it slipped in its slings whilst being craned onto a trailer. A further mishap overtook the second YF-105B, 54-0101 when the main undercarriage legs failed to lower on landing. Once again the pilot made a controlled crash landing, but was most sur-



Republic F-105D Thunderchief 62-4301 upper and lower camouflage pattern. Standard pattern with FS36081 substituted for FS30319.



Republic F-105D Thunderchief Reverse pattern upper surfaces and standard FS36622 undersides.



Complete with wraparound camouflage and centreline baggage pod this F-105D is on the inventory of the 466th TFS AFRES based at Hill. (via Dennis R Jenkins)

prised when the main gear started to lower as he walked away. Careful investigation revealed a bizarre cause. When this airframe was constructed an intake blow out door was built into the wheel bay wall for each main undercarriage. During the flight these doors had opened in flight thus causing a partial vacuum. This had been maintained all the way to touch down and had not finally dispelled until the engine had shut down. As the gear had already been selected down it continued the extension operation once able to do so.

On 27 May 1958 the United States Air Force accepted its first F-105B, 54-0111, for operational service. This was a sub-variant B-6 and was a one-off.

FIRST OPERATIONAL SQUADRON

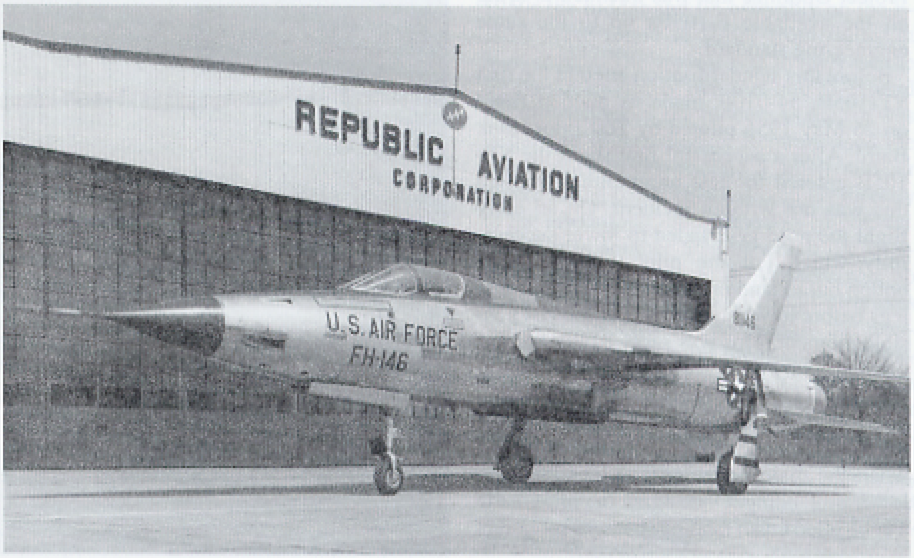
The first unit to fly the F-105B in anger was the 335th TFS based at Eglin AFB Test Centre, Florida, where it was detached from its parent unit the 4th TFW normally based at Seymour-Johnson AFB, North Carolina.

Seperated from its parent wing the 335th TFS used its initial allocation of F-105B aircraft to clear the type of its Category II test requirements. The final batch of evaluation flights carried out under the heading of Category III clearance test flights used the later build B-10 and B-15 build airframes and concerned pilots from both the 334th and 335th TFS. As this was the final stage before general USAF acceptance the squadrons were fortunate in being issued with post 'Optimize' aircraft.

The aircraft that presented itself to the pilots carrying out the Category III flight tests was a further evolution of those that had gone before. The fuselage length had settled at 63ft 11 inches whilst the span was 34ft 11 inches. Height to the tip of the fin was averaged at 19ft 8 inches depending on loading. The powerplant in the 'B' model was the Pratt & Whitney J75-P-5 engine rated at 23,500 lbs.st in full afterburner which allowed the F-105B to become airborne after using about 8,000 feet of runway with a combat load. This included, as a basic, a fuel load of 1,160 US gallons housed internally in seven fuselage tanks with extra being carried in either a pair of 450 US gallon underwing tanks or a single 600 US gallon centreline tank.

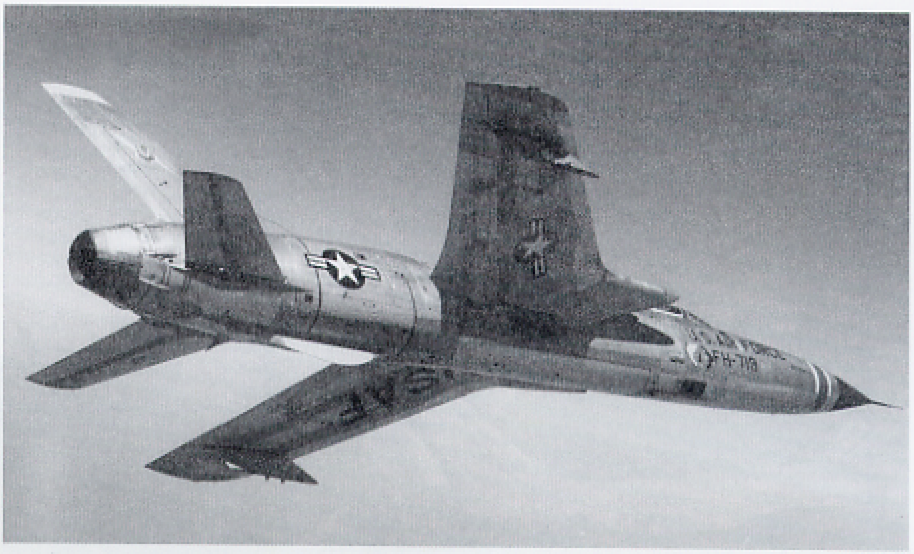
The refinement of the fuselage by the application of area rule meant that the F-105B could travel at Mach. 2.8 in a clean configuration whilst climbing to height at a rate of 34,000 feet per minute in full afterburner which allowed the combat ceiling of 49,000 feet to be reached very quickly. Ferry range was a reasonable 1,900 miles although combat radius for a fully loaded aircraft was just over 200 miles.

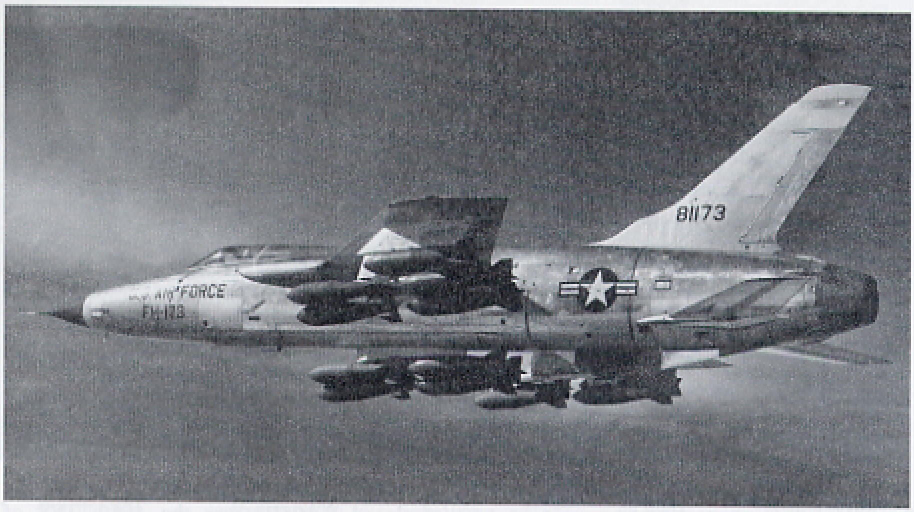
With the completion of the Category III evaluation the F-105B, by now officially named Thunderchief, was cleared for USAF service. In the event Republic manufactured 15. During the Optimize programme all



Right: F-105D, 58-1146 was the first production aircraft of this version. It is shown outside the Farmingdale flight test shed of Republic Aircraft (via Dennis R Jenkins)

Right: In 1960 59-1719 was on the strength of the 4th TFW when this shot was taken. Only the outboard pylons are installed. Note many of the changes that marked the difference between the 'B' and 'D' models. Lower right: 58-1173 was an F-105D with the ADTC before it ended its career with the 121st TFS of the Virginia ANG. (via Dennis R Jenkins)





were brought up to Block-20 standard before issue to operational squadrons. This final group of airframes totalled 38 in number and featured the J75-P-19W engine which offered another 1,000 lbs of thrust on take off by the injection of demineralised water into the afterburner.

MISSILE CRISIS AND RECORDS

The primary operator of the F-105B version was the 4th TFW whose squadrons, the 334th and 335th TFS, had finally returned to their Seymour-Johnson home with their new mounts. Only two other units were to operate the 'B' model these being the 23rd TFW based at McConnell AFB, Kansas, where they were used as conversion trainers for the more advanced 'D' variant. The other operator was the world famous Thunderbirds aerobatic demonstration team which will be dealt with in greater detail later.

Whilst in service with the 4th TFW the F-105B equipped three of its four assigned units. During this period the Thunderchief part of the wing normally operated approximately 60 aircraft although the normal USAF minima was set at 75 aircraft. This of course was not possible as the air force had only ordered that number in the first place therefore there were no spares to cover attrition or other events.

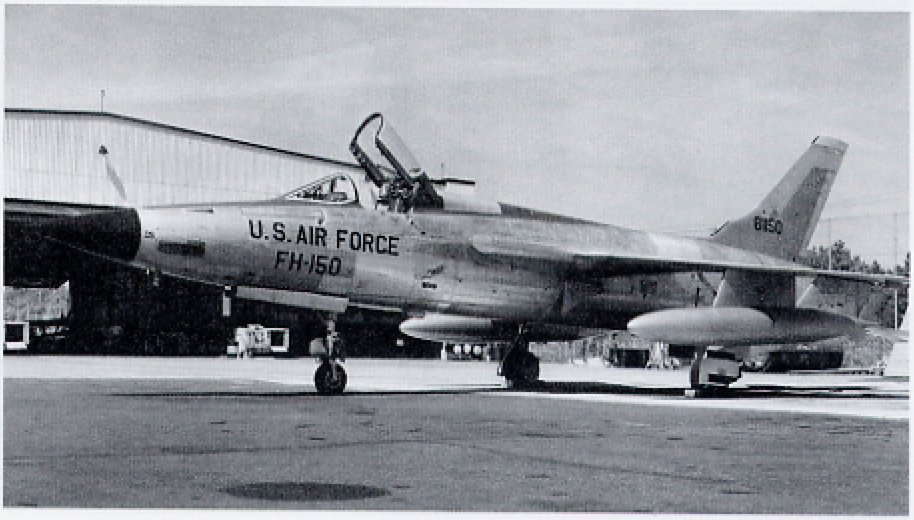
In common with many jet aircraft introduced in the late 1950s, early 1960s, there were a strict set of limitations applied to pilots that wanted to fly the Thunderchief. The greatest of these was that at least 200 flying hours needed to be accumulated on another Century series type before the budding tyro could be considered. Having passed this first hurdle the pilot then attended ground training school for a 16-day course that led him into the complex secrets of the F-105B. At the conclusion of the lecture period the pilot then underwent a 75 hour flying evaluation period before being passed to fly the Thunderchief.

Only one significant incident was to impinge upon the relatively quite service life of the F-105B. This was the Cuban missile crisis of 1962. These missiles and their silos had been spotted by reconnaissance overflights and had led to President John F Kennedy confronting the Soviet Union over their installation.

For the aircraft and crews of the 4th TFW this meant being warned for possible combat duty on 18 October and a deployment to McCoy AFB, Florida, where they were placed on one hour 'ready alert' status. The role ironically was that of air superiority not that of special weapons delivery or attack bomber both of which the pilots had trained for assiduously. The period of alert was maintained until the Thunderchiefs returned home to Seymour-Johnson on 29 November 1962.

During the crisis the 4th TFW had borrowed some 20 of the new F-105D model from the 4500th Combat Crew Training Squadron, Nellis AFB, to bring the wing up to full combat strength. This had been required as the USAF F-105B fleet had started in another upgrade programme called Project Look Alike which had started on 20 June 1962. This was very much an IRAN operation although it mainly concentrated on the rigging and setting up of the flying control system and the state of the electrical wiring looms. At the end of each of these major rebuilds the F-105B would be sprayed in a coat of overall silver lacquer in an attempt to seal the electronic compartments thereby reducing the downtime attributable to the ingression of moisture. The whole programme had taken over five months to complete and was therefore in full swing when the crisis over Cuba had erupted.

The final record of note in the annals of the F-105B concerned Project Fast Wind. This had begun in early 1959 and culminated on 11 December when Brigadier General Joseph H Moore USAF broke the World Speed Record for the closed 100 kilometre circuit. This was undertaken over a 99 km circular course overhead Edwards AFB at an altitude of 38,000 feet. The final top speed



The 388th TFW was the final operator of F-105D, 58-1150, shown outside the Republic flight test shed. Note the olive drab around the cockpit area. (via Dennis R Jenkins)

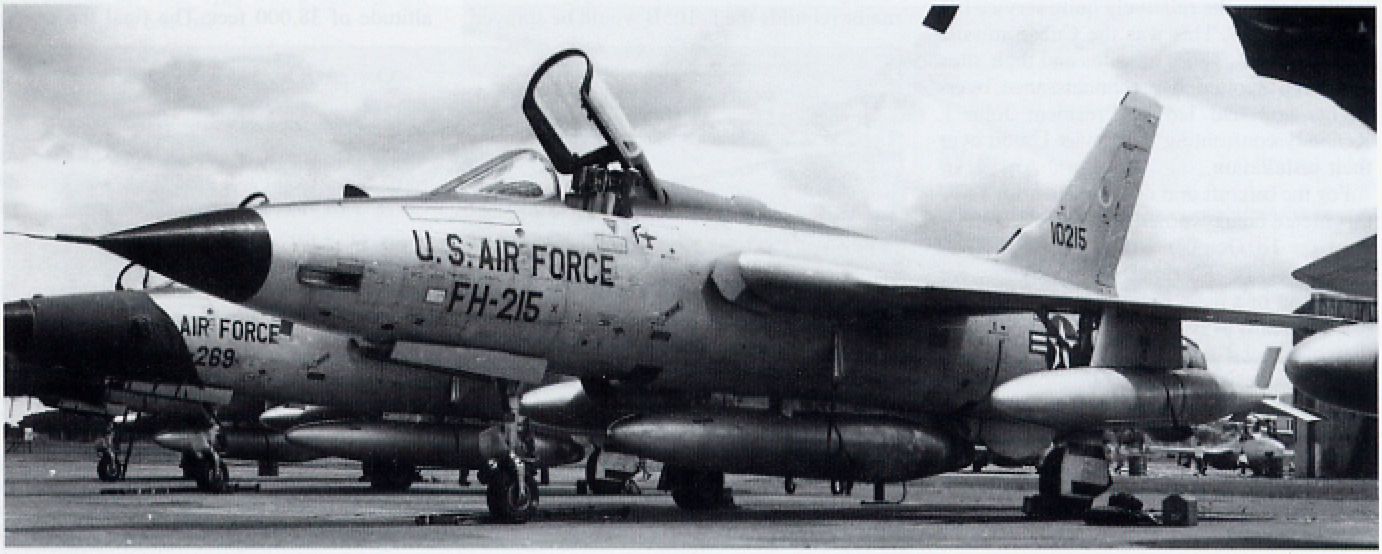
reached during this attempt was 1,216.48 mph which easily broke the record of the previous holder, France.

Within two months of the conclusion of the Cuban Crisis the 4th TFW began to replace its F-105B's with the more potent F-105D variant. The earlier version was completely phased out of USAF frontline service on 16 April 1964 when they were handed over to the 141st TFS of the New Jersey Air National Guard based at McGuire AFB. The other part time combat unit to receive the replaced F-105Bs was the 466th TFS of AFRES based at Hill AFB, Utah.

The final production batch of six F-105B's finally left the production line in December 1959. During this run each aircraft had an average flyaway cost of $5,649,543 although this was later augmented by the costs of the various upgrade programmes which came to nearly $300,000 per airframe. The final F-105B was deleted from the inventory in 1981.

It is interesting to note that although the Thunderchief achieved no foreign sales Republic made strenuous efforts to sell the F-105 to both Belgium and Holland with considerable offsets involved by the use of local manufacture. In the event the order went to the multi-role Lockheed F-104G Starfighter. Investigations were also carried out with a view to installing the Rolls Royce RB.168-25R Spey engine in place of the Pratt & Whitney offering and presenting it to the RAF for consideration. As this was the period when the BAC TSR2 and the Hawker P.1154 were under development for that service the idea was not progressed further. The irony is that neither of the British offerings made it to the frontline squadrons either.

Although the F-105B had proven the concept of the Thunderchief as an attack aircraft



Thunderchief 61-0215 is shown here resplendent in overall silver lacquer finish. This was applied after the extensive fuselage sealing programme had been carried out. (Alan W. Hall Collection)

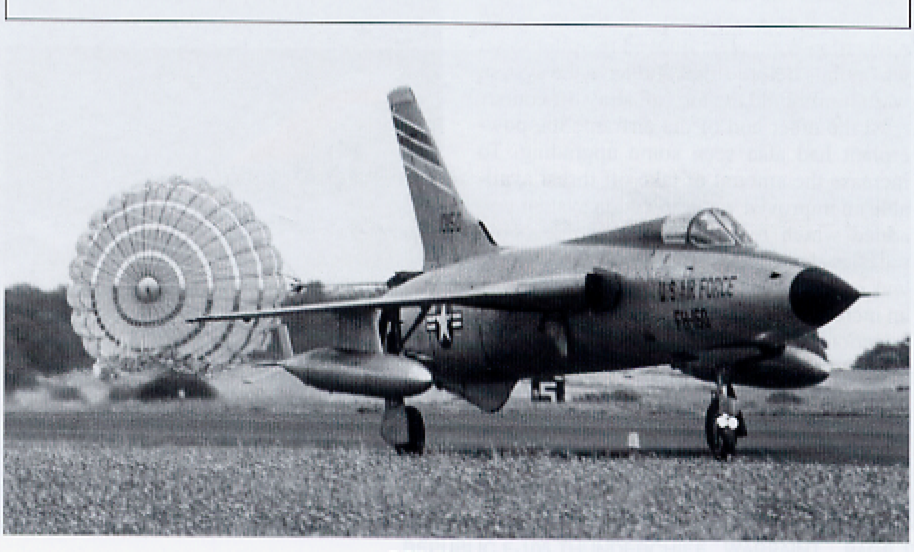
This is a general view of one of the dispersals at Spangdahlem, home of the 49th TFW. Typical of many German dispersals it is surrounded by trees. (Alan W Hall)

it was obvious from the outset that it was very much an interim version before production of the more capable 'D' model. One of the major differences between these variants was the change to a true all weather attack system, the earlier 'B' aircraft being limited in that respect. To achieve this aim Republic offered to install the AN/ASG-19 Thunderstick bombing and navigational system complete with integrated fire control. Options presented to the pilot by the Thunderstick included visual and blind bombing selection. Also selectable were the air to air and air to ground options which covered the operational mode of the internal cannon and external bombs or missiles.

The core of the AN/ASG-19 was the NASAAR R-14A developed by the Autonetics Division of North American Aircraft. This was capable of ground mapping and terrain avoidance, all courtesy of a contour mapping radar. This system had also been developed to have an improved search and radar ranging facility in both the air to air and air to ground attack modes. Also, included in this setup was an X-band beacon and an APN-131 Doppler radar the inclusion of which had been made possible by the use

F-105 SQUADRONS AND UNITS

Squadron	Wing	Variant used	Example serial	Code
334th TFS	4th TFW	F-105D	59-1723	
335th TFS	4th TFW	F-105B	57-5780	
336th TFS	4th TFW	F-105D	60-0429	
80TFS	8th TFW	F-105D		'GR'
12th TFS	18th TFW	F-105D	62-4328	'ZA' also 'ZB'
13th TFS	18th TFW	F-105D		
17th WWS	18th TFW	F-105D/G		'ZB'
4519th TFS	23rd TFS	F-105B	57-5835	'MG'
560th TFS	23rd TFW	F-105D	60-0452	'MC'
561st TFS	23rd TFW	F-105D	62-4409	'MD'
562nd TFS	23rd TFW	F-105D	60-0526	'ME'
563rd TFS	23rd TFW	F-105D	61-0047 (T-Stick II)	'MF'
8th TFS	49th TFW	F-105D	61-0100	
561st TFS	35th TFW	F-105F	63-8265	'GA' later 'WW'
562nd TFS	35th TFW	F-105G	63-0339	'GA'later 'WW'
22nd TFS	36th TFW	F-105F	63-8304	
23rd TFS	36th TFW	F-105D	60-0445	
	49th TFW	F-105F	63-8326	
80th TFS	374th TFW	F-105D		'GR'
44th TFS	355th TFW	F-105D		
44th TFS		EF-105F	63-8280	'RE'
333rd TFS	355th TFW	F-105D	62-4375	'RK'
354th TFS	355th TFW	F-105D		
357th TFS	355th TFW	F-105D	58-1172	'RU'
34th TFS	388th TFW	F-105D	61-0152	'JJ'
44th TFS	388th TFW	F-105D		'JE'
469th TFS	388th TFW	F-105D	61-1161	'JV'
6010th TFS	388th TFW	F-105G	62-4423	'ZB'
305th TFS	507thTFG AFRES	F-105D		'UC'
465th TFS	507th TFG AFRES	F-105D	59-1729	'SH' was 'UC'
466th TFS	508th TFG AFRES	F-105B	57-5813	'HI'
66th FWS	57th FWW	F-105F	63-8269	'GA' was'WC'
4537th FWS	4525th FWW	F-105F	63-8304	'WC'
17th WWS		F-105G	63-8316	'GA'
44th TFS		EF-105F	63-8280	
119th TFS	New Jersey ANG	F-105D	57-5808	
121st TFS	DC-ANG	F-105B	59-1738	
127th TFTS	Kansas ANG	F-105D	60-0452	
128th TFS	Georgia ANG	F-105G	62-4444	
141st TFS	New Jersey ANG	F-105B	57-5793	
149th TFS	Virginia ANG	F-105D	62-0229	
4520th CCTW		F-105F	63-4423	
Thunderbirds Aerial Demonstration Team		F-105B	57-5782	
ARDC		F-105B	64-0103	
ADTC		F-105G	62-4434	



One other USAFE Thunderchief wing that was located in Germany was the 36th TFW based at Bitburg. F-105D 61-0150 has streamed its chute after touch down to reduce wear on the brakes. (Alan W Hall)

This 388th TFW F-105D is queuing for a tanker slot after its compatriot has taken its requirements from the KC-135. (via Dennis R.Jenkins)

of an increased diameter radar antenna. This in turn had meant a redesign of the forward fuselage which had grown another 15 inches to accommodate the extra equipment.

The ergonomics of the cockpit had also seen some radical changes. Gone were the greater majority of dial instruments, these having been replaced by vertical tape instrumentation which were found to be easier to read under combat conditions. The new instrument layouts introduced in the 'D' model included the Attitude Direction Indicator, the Horizontal Situation Indicator, the Airspeed Mach Indicator and the Attitude Vertical Velocity Indicator. Other system changes saw the inclusion of the AN/ASQ-37 communications set, the AN/ARA-48 direction finder, the AN/ARN-61 instrument landing system, the AN/ARN-62 TACAN and the AN/APX-27 IFF system. Another bonus, courtesy of the on-board navigation computer, allowed the pilot to set way points before flight and have the system warn him should the aircraft stray off course.

At the other end of the airframe the powerplant had also seen some upgrading. To increase the amount of take off thrust available an improved water injection system was added which resulted in the engine being redesignated the J75-P-19W. Overall thrust was rated at 26,500 lbs.st in full afterburner, an increase of 2,000 lbs.st. Without the water injection system the engine was capable of 24,500 lbs.st in afterburner whilst the combat cruise thrust had 14,300 lbs.st available.

From a structural point of view the F-105D was very similar however some changes were needed to accommodate the enlarged engine, both the rear fuselage and intakes being affected. The improved and more capable avionics also saw the need for improvements mainly in the area of the main landing gear and brakes as the aircraft weight had risen by some 800 lbs.

INTRODUCING THE F-105D

The first production F-105D, 58-1146, made its maiden flight on 9 June 1959 with Republic Test Pilot Lin Hendrix at the controls. In the scheme of things this aircraft was a month early off the production line although the whole programme had slipped by three years. Category II Acceptance test was begun as soon as company flying was completed. These began in May 1960 with the 335th TFS again operating on TDY at Eglin AFB. These did not go as smoothly as hoped as problems with the uprated engine started to appear. These took until December to cure after which the aircraft returned to its evaluation duties. As the 'D' version was a radical departure from its predeccessor it is not surprising that the new systems required quite a lot of rectification and modification work to allow them to work correctly. However, there were those within USAF that had begun to express doubts about the F-105D and its place within that organisation.

To quell the doubters once and for all it was decided to hold a fly off between the Republic offering and its nearest rival, the McDonnell F-101 Voodoo. The intensive flying that followed resulted in the Thunderchief being declared the winner, to lose would have meant cancellation.

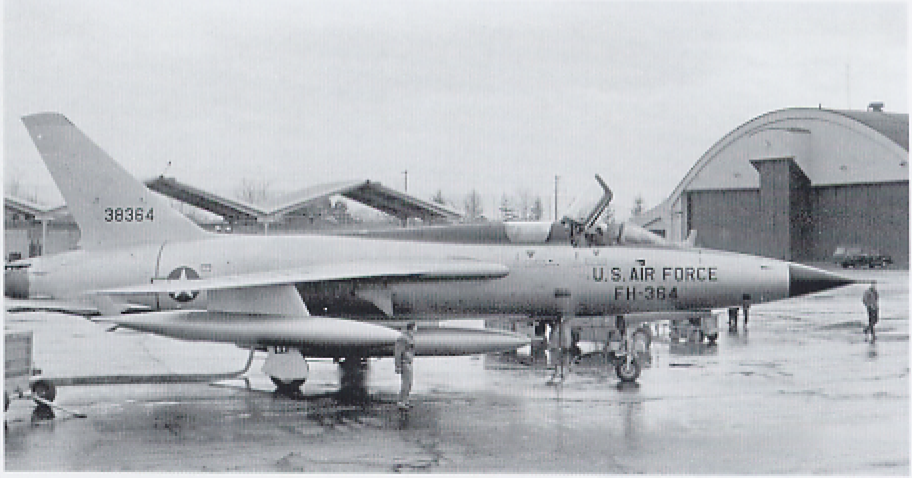
In the event USAF placed an order for 1,500 aircraft which was immediately reduced by fifty percent by Secretary of

Seen from below is F-105D 58-1173 complete with a large bomb load and special camera tracking markings for trials works. (via Dennis R.Jenkins)

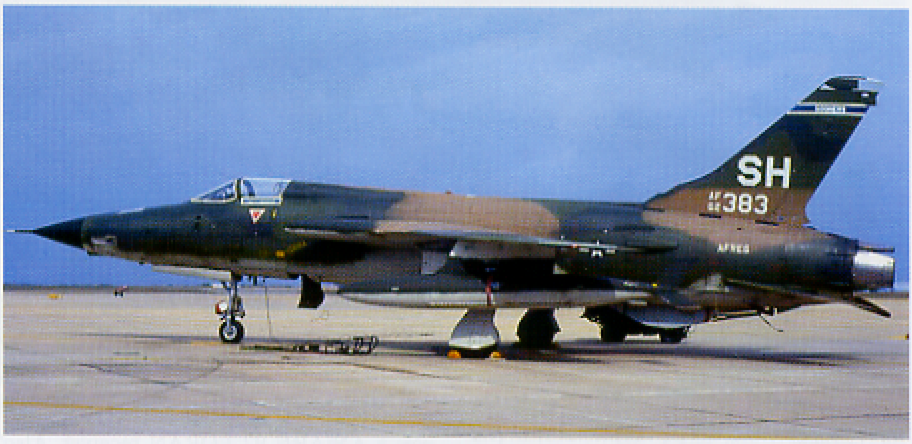
State McNamarra. As later events unfolded this would appear as an ill thought out decision. Thus only seven operational wings would receive the Thunderchief, the other seven originally slated to equip with the type eventually received the F-4 Phantom.

When the USAF had accepted the F-105B it had entered service almost straight away with the combat wing destined to operate it. For the F-105D a different form of pilot conversion was considered necessary thus the 4520th CCTW at Nellis AFB came into existence accepting its first production F-105Ds on 28 September 1960. These early build aircraft were initially regarded as interim airframes primarily for training therefore they would not immediately be subject to the usual upgrade path although an obvious exception would be modifications required to safeguard either the aircraft or the pilot.

Pilots destined to fly the Thunderchief first undertook a conversion course on the F-100F Super Sabre to enlighten them in the handling of an aircraft at supersonic speeds before transitioning onto the F-105D. This section of the course lasted some 45 flying hours and concentrated mainly upon the operation of the navigation and bombing avionics suite in particular the interpretation of targets using the R-14A.



Above: Surrounded by ground equipment this F-105F is on a visit to Bitburg. Note the high standard of overall finish. Below: After service with the frontline USAF many Thunderchiefs were passed onto the reserve units. This is F-105D 62-4383 of the 301st TFW of AFRES. (via Dennis R.Jenkins)



OVERSEAS DEPLOYMENT

With the training programme underway at Nellis the first operational wing formed in early 1961. This was the 4th TFW which had pioneered the Thunderchief in USAF service. Once the squadrons had achieved operational qualification it was the turn of overseas wings to receive the F-105D. Europe, and Bitburg AFB was the first unit to accept the Republic fighter-bomber on 12 May 1961 when the initial examples for the 36th TFW arrived. By October of the same year Spangdahlem and the 49th TFW were also equipped with the big jet.

Their joy however was shortlived as two serious accidents grounded both the 'B' and 'D' versions and a strike at the Republic plant halted production of aircraft and spares.To sort out the results of the accidents the USAF put all the extant Thunderchiefs through the Look Alike programme whilst the latter was sorted by the invocation of the Taft-Hartley Act which, needless to say, did nothing for future industrial relations. Operation Look Alike as applied to the later F-105s not only meant inspecting flying control runs, hydraulic lines and wiring looms, it also saw all the airframes brought up to Block D-25 standard. The IRAN and modification work was carried out at Brookly AFB, Alabama.

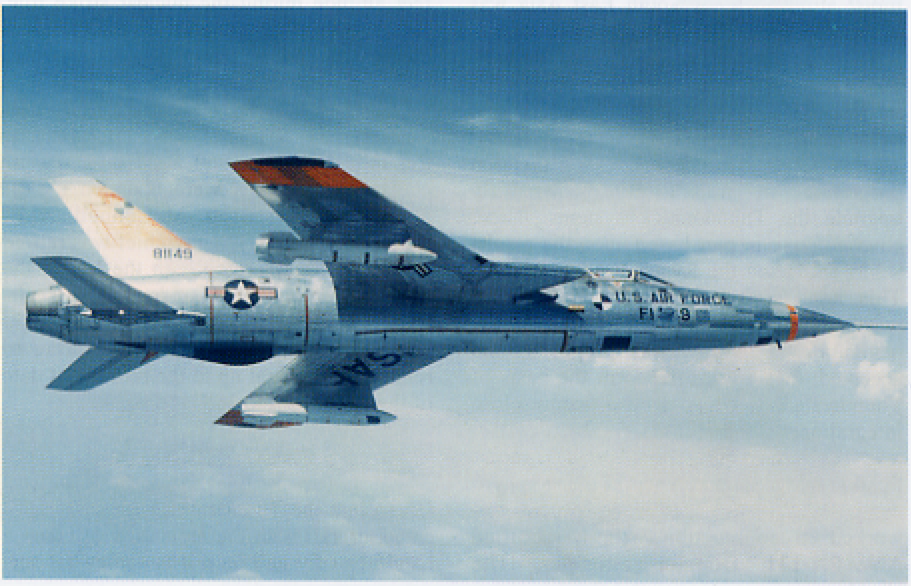
Some of the first airframes to undergo this process were those allocated to the European wings. This had been deemed a priority as the weather on the European continent was wetter than that of the Continental United States in general. To solve the problem of moisture ingression that was causing havoc with the delicate avionics suite the repair teams literally tore each airframe apart before liberally applying sealant to all the panels, even the riveted on ones.

During the strip down Republic's working party took the opportunity to install the wiring required to match up with the Martin AGM-12 Bullpup ground attack missile. Another modification embodied during this phase was the incorporation of a tail hook on the ventral fin for use in short field operations and during brake failure recoveries.

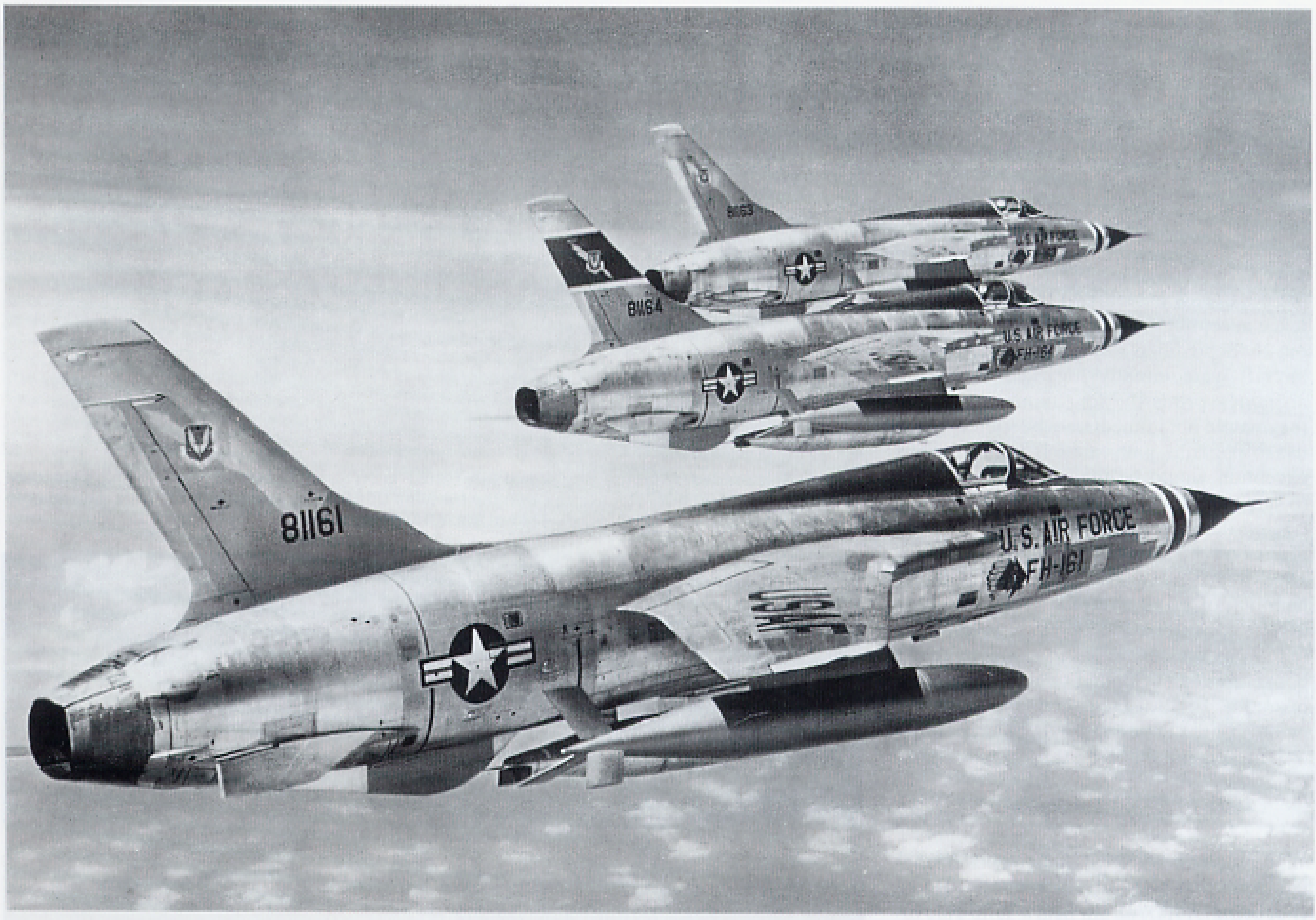
With the Thunderchief population of the United States and Europe dealt with it was now the turn of units in the Far East to accept the F-105D into their inventories. The first to convert was the 18th TFW based at Kadena AFB, Okinawa. It was quickly followed by the 8th TFW whose home airfield was Itazuke AB in Japan.

It was during these deployments that further problems related to the local environment arose. Under normal circumstances the small intake at the base of the fin plus the two rear fuselage vents proved adequate in providing cooling for the afterburner. However, high speed low-level combat manoeuvring was causing an overheating problem that required a positive fix.

The solution was to turn the rear vents into ram air scoops which provided the extra cooling needed although these did have



F-105D 58-1149 was also an armament trails aircraft as this view shows. Note the 'shapes' under the wings. (via Dennis R.Jenkins)



Complete with TAC badges on the fin these three Thunderchiefs are part of the 4th TFW. (via Dennis R.Jenkins)

small vents incorporated to bleed off excess air.

CAMOUFLAGE APPLIED

It was also during this period that the first Thunderchiefs began to appear in camouflage that would eventually replaced the overall silver finish. Consisting of two tone green and tan on the upper surfaces with light grey underneath, this finish was applied as each airframe underwent major overhaul. At the same time a further panel sealing programme was undertaken as the moist atmosphere of South East Asia was even more pernicious than that of Europe.

Although the avionics suite fitted to the F-105D was more than capable of performing its task adequately, age was beginning to cause degradation in performance. To alleviate this Republic put forward a modification programme in early 1969 to extensively upgrade the Thunderstick systems. These changes were in part based upon the results achieved during the Ryan's Raiders project. This had trialled an improved night/all weather attack system based on the LORAN navigation system. It was proposed, and accepted, that this would form the basis of Thunderstick II which would feature close integration with the aircraft's Doppler system. The basis of the Thunderstick II modification was a Singer/General Precision gyro compassing vertical reference system that worked in conjunction with a modified AN/APN-131 Doppler altimeter. The LORAN was courtesy of ITT Avionics and was a AN/ARN-92 LORAN receiver. Also upgraded was the NASAAR radar system where many of the earlier valve based equipment was replaced by solid state electronics which resulted in a designation change to R-14K.

The only sign of an aircraft having been modified to accept the Thunderstick modifications was the considerably thickened spine that ran from the cockpit to the fin base. However it was during operations that the benefits were really apparent. Not only was the F-105D more consistently accurate during air-to-air and air-to-ground operations it had an enviable accuracy of plus/minus 50 ft Circular Error of Probability from 15,000 feet altitude during the nuclear strike role. Another area that gained from the improvements was that of terrain avoidance which had been reduced to plus/minus 30 feet at an altitude of 1,500 ft.

Only 30 airframes were modified by Republic between 1969 and 1971. All the converted airframes were operated by the 23rd TFW based at McConnell AFB, Kansas. When the Thunderchief was retired from front line service with the USAF the entire inventory of Thunderstick II airframes was passed to the 475th TFS based at Carswell AFB, Texas where they were to remain in use right up to the retirement date of the F-105 in late 1982.

TRAINER VERSION

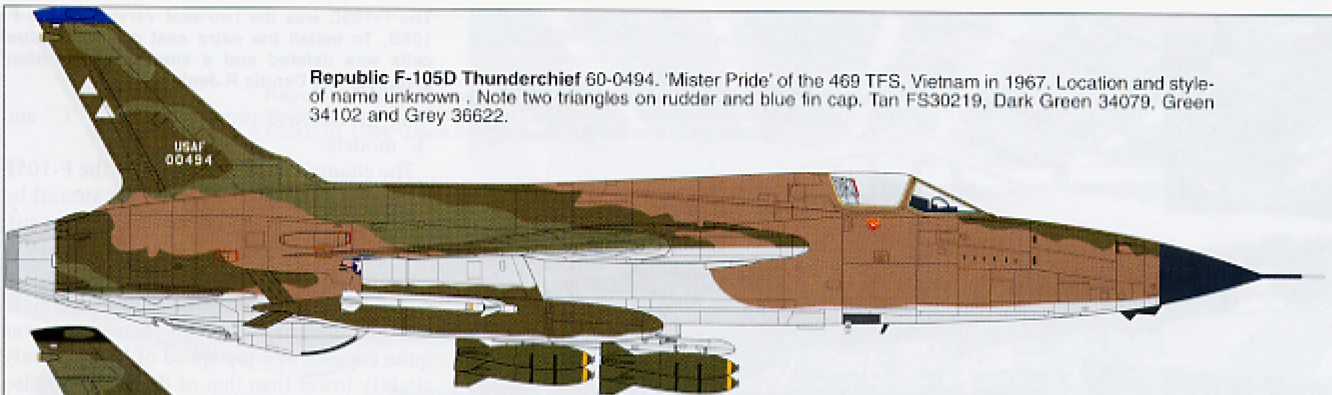
Given that the Thunderchief was a complicated aircraft with the reputation of being a handful to fly and land it is somewhat surprising that both Republic and the USAF took so long to assemble the specification for a two seat trainer. The first venture by Republic was designated the F-105C and featured a standard 'B' model where the No.1 forward fuel tank was replaced by a second seat for the instructor all being covered by a single one piece canopy. Although the 'C' would have lacked one fuselage fuel tank it would have covered not only the transitional trainer requirement, but would have been fully capable of combat should the need have arisen.

A batch of five F-105Cs was ordered in 1956 for evaluation purposes and were cancelled as quickly within a few months due to the rising costs of the overall F-105 programme.

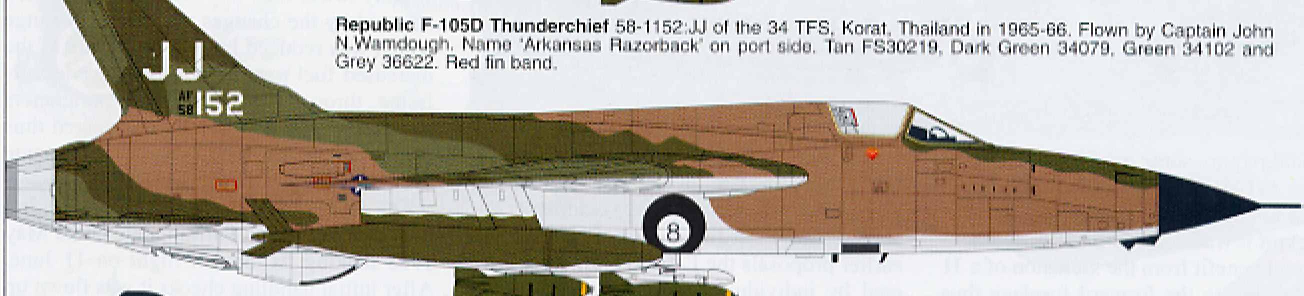
The second attempt made by Republic to sell a Thunderchief trainer was undertaken using the F-105E. This was similar in concept to the earlier F-105C although in this case it was based upon the more advanced F-105D. Funding was initially agreed to build some of this version and building of the prototype was well underway when yet again the programme was terminated in 1959, the reason again being given as rising costs.

The final version that was to enter USAF service was first mooted in May 1962. By this time the required stock of two seat F-100Fs needed for both the Super Sabre and Thunderchief fleet had fallen below that necessary and there were no plans to restart the production line. This turn of events finally forced the USAF's hand into ordering a two-seat Thunderchief.

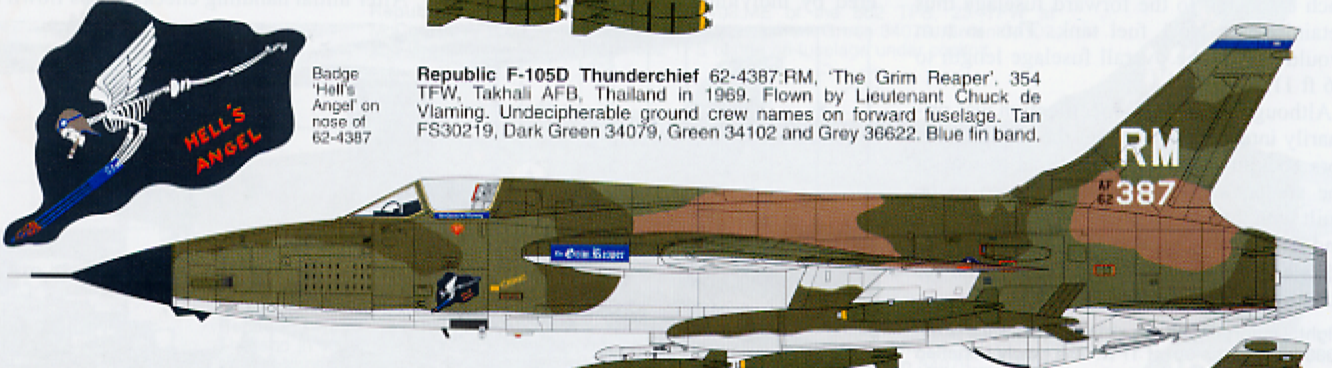
The standard chosen as the basis for the design was the Block-D31 airframe although



Republic F-105D Thunderchief 60-0494. 'Mister Pride' of the 469 TFS, Vietnam in 1967. Location and style of name unknown . Note two triangles on rudder and blue fin cap. Tan FS30219, Dark Green 34079, Green 34102 and Grey 36622.



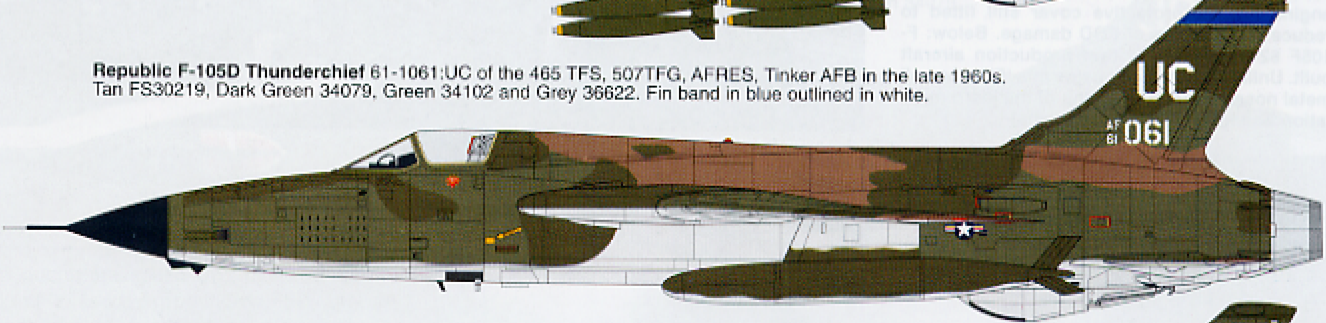
Republic F-105D Thunderchief 58-1152:JJ of the 34 TFS, Korat, Thailand in 1965-66. Flown by Captain John N.Wamdough. Name 'Arkansas Razorback' on port side. Tan FS30219, Dark Green 34079, Green 34102 and Grey 36622. Red fin band.



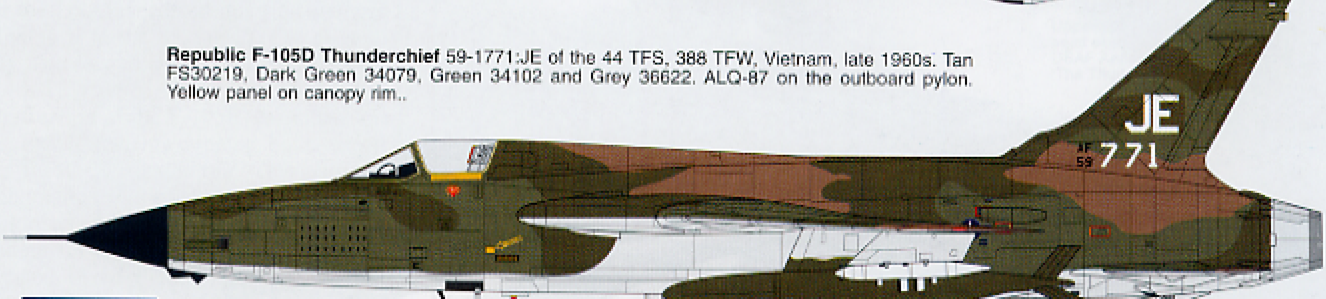
Badge 'Hell's Angel' on nose of 62-4387

Republic F-105D Thunderchief 62-4387:RM, 'The Grim Reaper', 354 TFW, Takhali AFB, Thailand in 1969. Flown by Lieutenant Chuck de Vlaming. Undecipherable ground crew names on forward fuselage. Tan FS30219, Dark Green 34079, Green 34102 and Grey 36622. Blue fin band.

Republic F-105D Thunderchief 61-1061:UC of the 465 TFS, 507TFG, AFRES, Tinker AFB in the late 1960s. Tan FS30219, Dark Green 34079, Green 34102 and Grey 36622. Fin band in blue outlined in white.

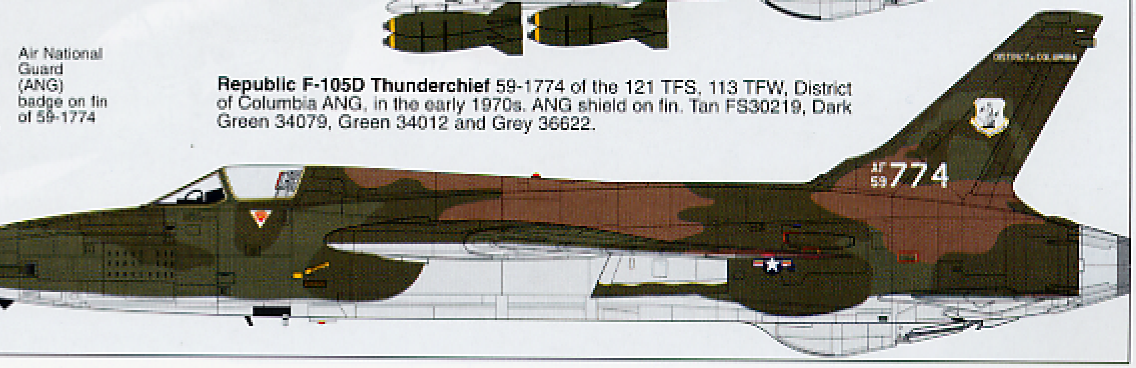


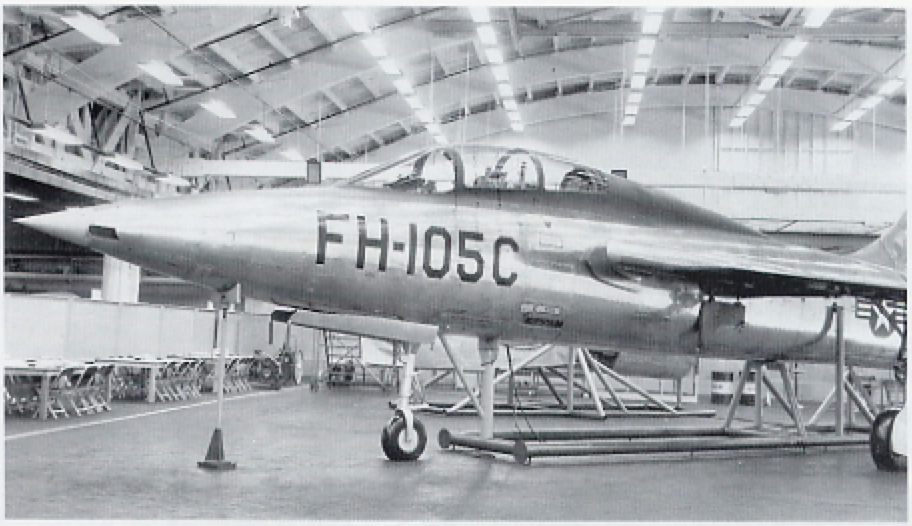
Republic F-105D Thunderchief 59-1771:JE of the 44 TFS, 388 TFW, Vietnam, late 1960s. Tan FS30219, Dark Green 34079, Green 34102 and Grey 36622. ALQ-87 on the outboard pylon. Yellow panel on canopy rim..



Air National Guard (ANG) badge on fin of 59-1774

Republic F-105D Thunderchief 59-1774 of the 121 TFS, 113 TFW, District of Columbia ANG, in the early 1970s. ANG shield on fin. Tan FS30219, Dark Green 34079, Green 34012 and Grey 36622.





The F-105C was the two-seat version of the F-105B. To install the extra seat one of the fuel cells was deleted and a single piece canopy installed. (via Dennis R.Jenkins)

this would require some modification to produce the F-105F. Instead of just deleting a fuel tank to allow the incorporation of a second cockpit it was decided that the new version would benefit from the inclusion of a 31 inch extension to the forward fuselage thus retaining the No.1 fuel tank. This in turn would extend the overall fuselage length to 66 ft 11.8 inches.

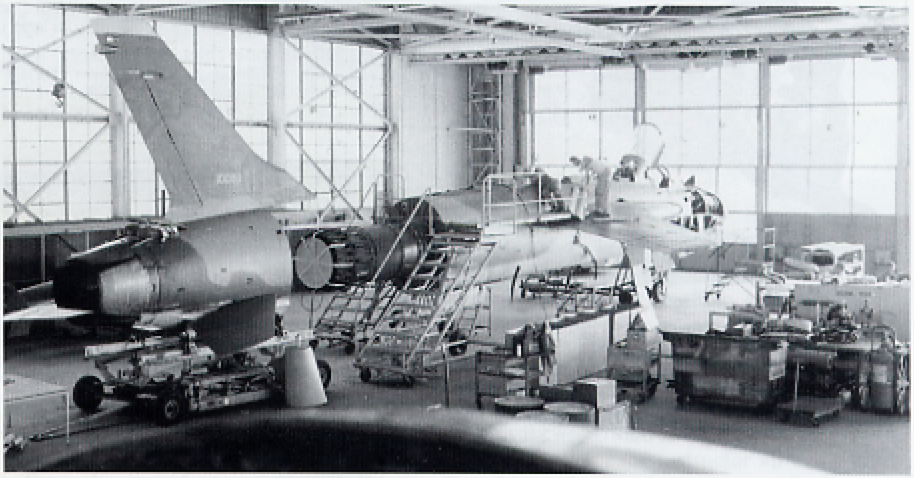
Although the F-105F specification was primarily intended as a trainer the rear instructors cockpit was almost identical to that of the student's. The F-105F was also to be built with the latest standard of ASG-19 FCS and R-14A radar system plus all the avionics for weapons delivery and a Gatling gun for strafing and self defence.

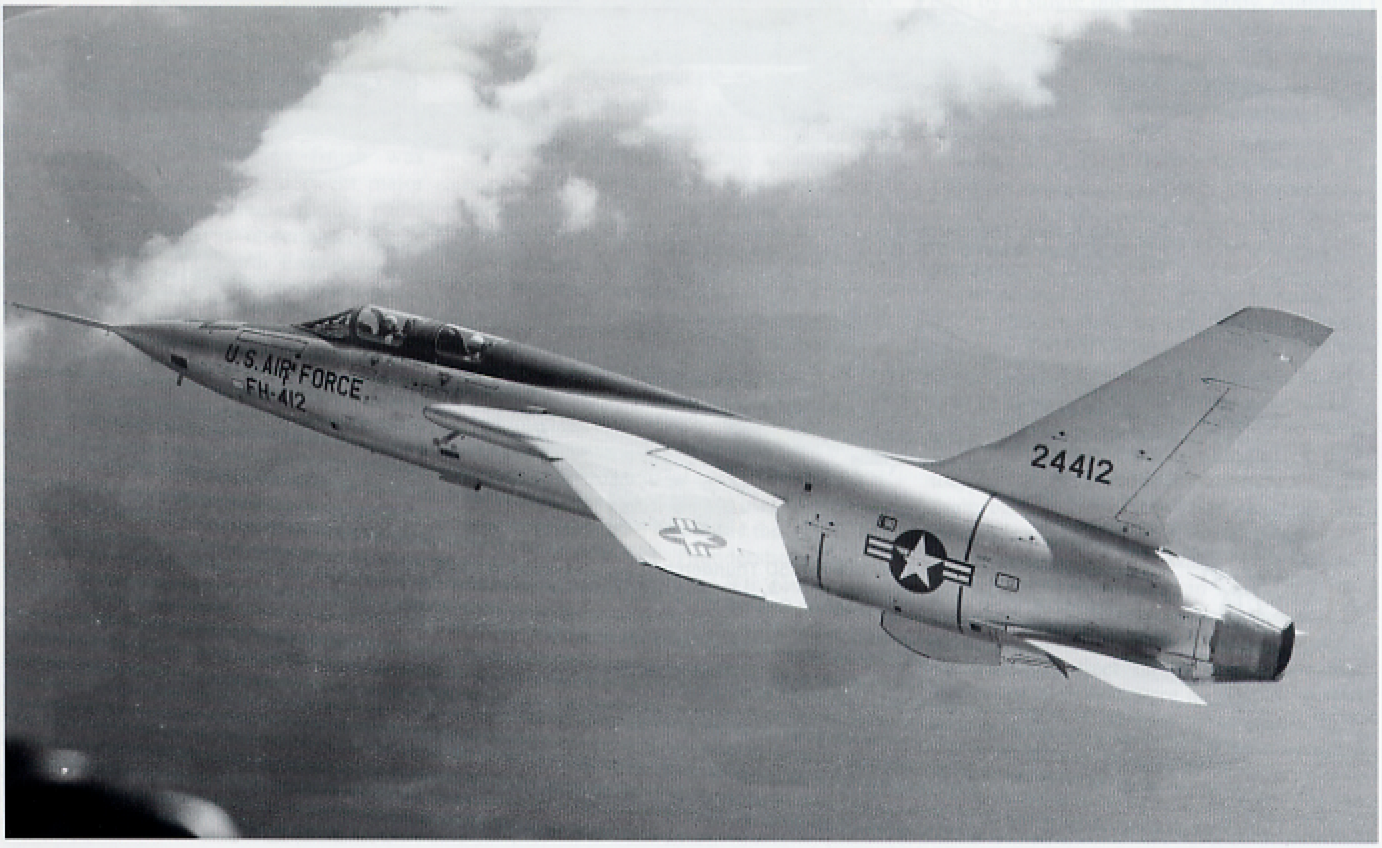
One further obvious modification applied to the 'F' model was an increase in fin height and area which was needed to counteract the enlarged forward fuselage area. Unlike the earlier proposals the F-105F crew were covered by individual canopies instead of the long greenhouse proposed for the 'C' and 'E' models.

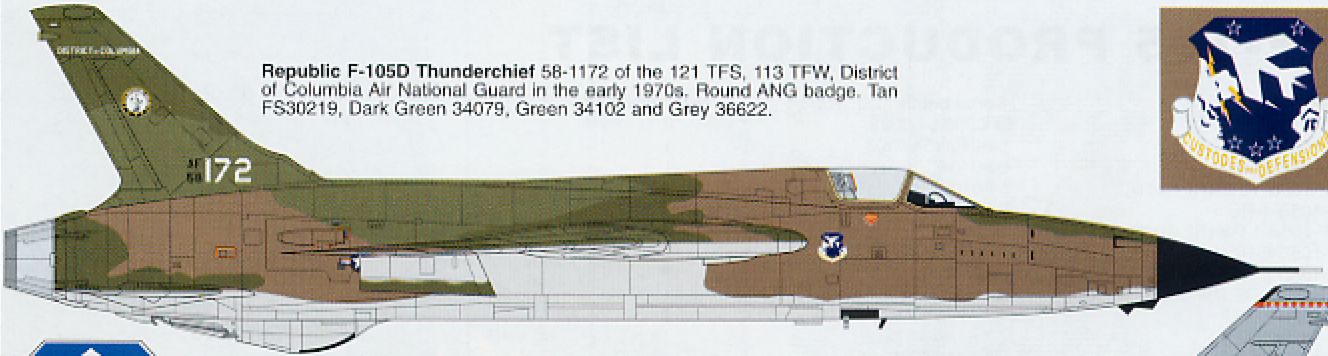
The changes needed to produce the F-105F increased the all up weight of the aircraft by some 3,101 lbs however the powerplant still remained the Pratt & Whitney J75-P-19W engine. The possible expected drop off in performance caused by the increased weight did not materialise as the two-seater was quite capable of a top speed of Mach 2, only slightly lower than that of the F-105D. Also affected by the changes was the ferry range which was reduced by 300 miles due to the increased fuel used to push the heavier airframe through the air. Other parameters however remained virtually unchanged thus the F-105F could climb to height at the same rate as the single-seater.

The first production F-105F, 62-4412, left the assembly line at Farmingdale on 23 May 1963 making its maiden flight on 11 June. After initial handling checks it was flown up

Right: Undergoing deep strip maintenance is 61-0080 later of the 301st TFW. The newly installed engine has its protective cover still fitted to reduce the chances of FOD damage. Below: F-105F 62-4412 was the first production aircraft built. Unlike its service cousins this 'F' had an all metal nose cone for mounting of the instrumentation boom. (via Dennis R.Jenkins)

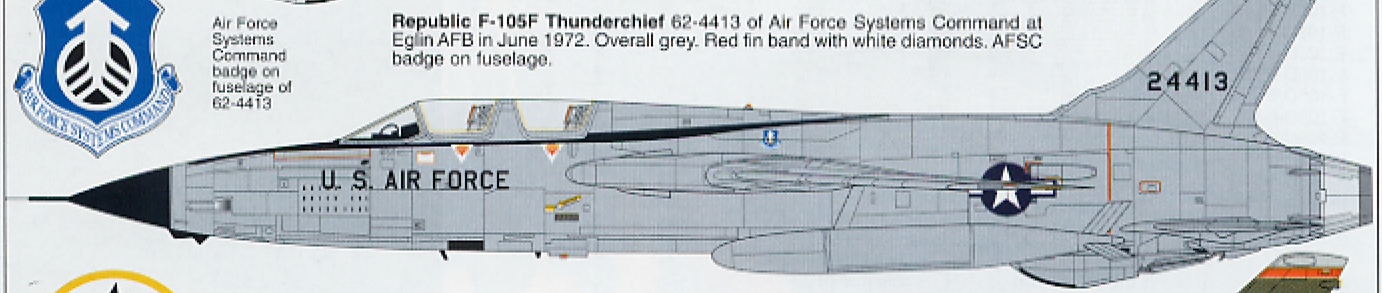






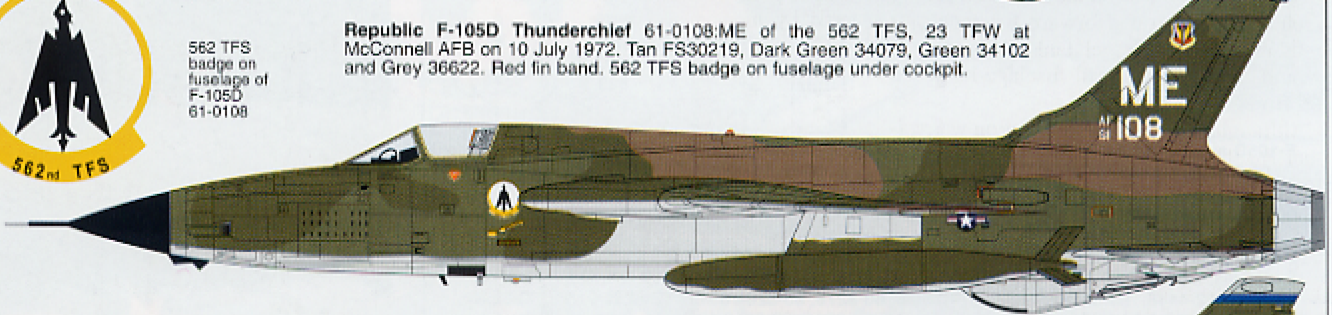
Republic F-105D Thunderchief 58-1172 of the 121 TFS, 113 TFW, District of Columbia Air National Guard in the early 1970s. Round ANG badge. Tan FS30219, Dark Green 34079, Green 34102 and Grey 36622.

Air Force Systems Command badge on fuselage of 62-4413

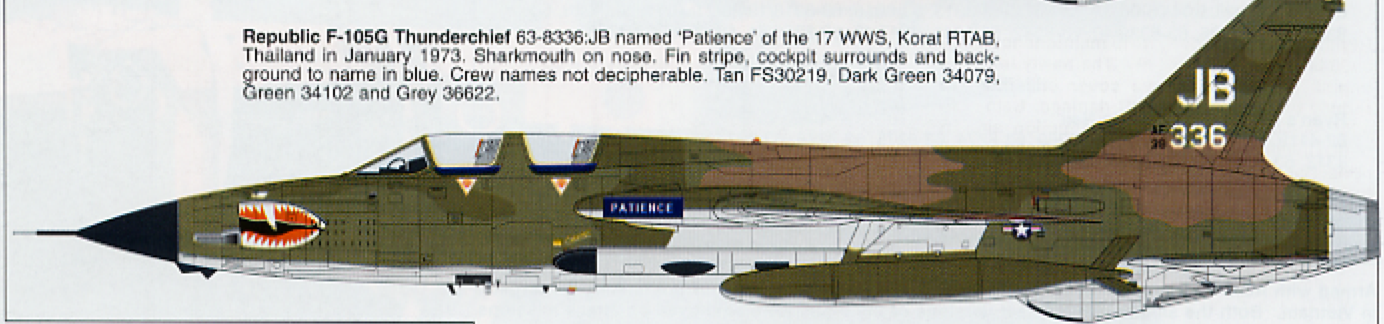


Republic F-105F Thunderchief 62-4413 of Air Force Systems Command at Eglin AFB in June 1972. Overall grey. Red fin band with white diamonds. AFSC badge on fuselage.

562 TFS badge on fuselage of F-105D 61-0108



Republic F-105D Thunderchief 61-0108:ME of the 562 TFS, 23 TFW at McConnell AFB on 10 July 1972. Tan FS30219, Dark Green 34079, Green 34102 and Grey 36622. Red fin band. 562 TFS badge on fuselage under cockpit.



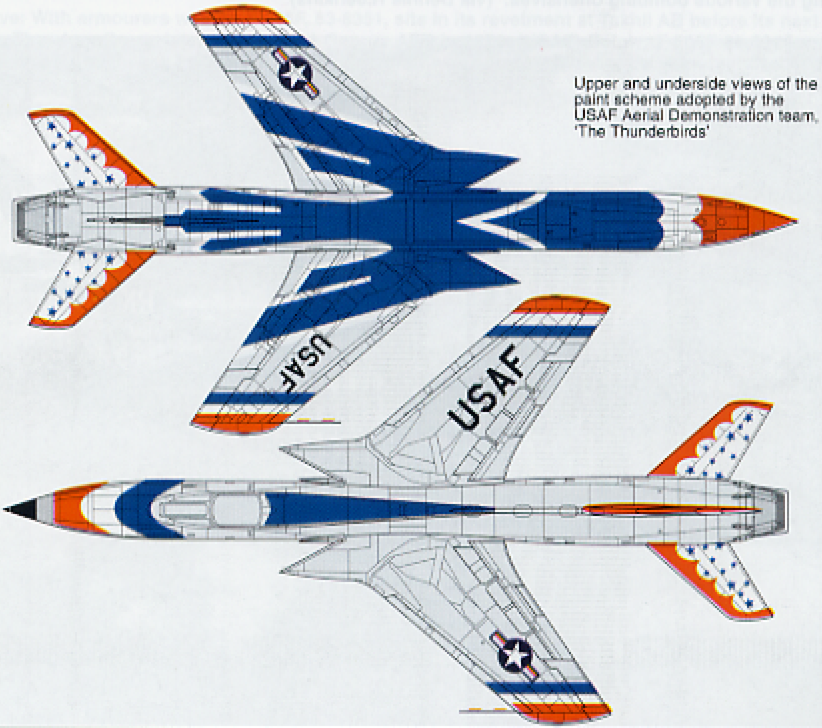
Republic F-105G Thunderchief 63-8336:JB named 'Patience' of the 17 WWS, Korat RTAB, Thailand in January 1973. Sharkmouth on nose. Fin stripe, cockpit surrounds and background to name in blue. Crew names not decipherable. Tan FS30219, Dark Green 34079, Green 34102 and Grey 36622.

to a maximum speed of Mach 1.5 before making a successful landing. Six months later the USAF accepted this first airframe, assigning it to the 4520th CCTW at Nellis AFB. The second trainer was despatched to the 4th TFW on 23 December 1963.

Production of the F-105F was in two distinct batches, the first being built directly after the D-31 fighter run. This particular batch totalled 36 airframes whilst the second block reached a maximum of 107 airframes. Funding for these aircraft came from those allocated to an F-105D production batch. This batch also included the last Thunderchief built, this being F-105F, 63-8366, which the USAF accepted in January 1965. As more and more aircraft entered the inventory it became quite normal for each squadron in a wing to have two two-seaters for continuation and conversion training.

THUNDERBIRDS

Having covered all the basic variants of the Thunderchief it is worth looking at some other versions that saw some USAF service. The first was a batch of F-105Bs that were



Upper and underside views of the paint scheme adopted by the USAF Aerial Demonstration team, 'The Thunderbirds'

F-105 PRODUCTION LIST

Version	Serial batch	Numbers built
YF-105A-1-RE	54-0098/54-0099	2
F-105B-1-RE	54-0100/54-0103	4
F-105B-5-RE	54-0104	1
JF-105B-1-RE (RF-105B)	54-0105	1
F-105B-1-RE	54-0106/54-0107	2
JF-105B-1-RE (RF-105B)	54-0108	1
F-105B-5-RE	54-0109/54-0110	2
F-105B-6-RE	54-0111	1
JF-105-2-RE (RF-105B)	54-0112	1
F-105B-10-RE	57-5776/57-5784	9
F-105B-15-RE	57-5785/57-5802	18
F-105B-20-RE	57-5803/57-5840	38
F-105D-1-RE	58-1146/58-1148	3
F-105D-5-RE	58-1149/58-1173	25
F-105D-5-RE	59-1717/59-1757	41
F-105D-6-RE	59-1758/59-1774	17
F-105D-6-RE	59-1817/59-1826	10
F-105D-6-RE	60-0409/60-0426	18
F-105D-10-RE	60-0427/60-0535	109 *1
F-105D-10-RE	60-5374/60-5385	12 *2
F-105D-15-RE	61-0041/61-0106	66 *3
F-105D-20-RE	61-0107/61-0161	55 *4
F-105D-25-RE	61-0162/61-0220	5
F-105D-25-RE	62-4217/62-4237	21
F-105D-30-RE	62-4238/62-4276	39
F-105D-31-RE	62-4277/62-4411	135
F-105F-1-RE	62-4412/62-4447	36 *
F-105F-1-RE	63-8260/63-8366	107 *6
	Total	833

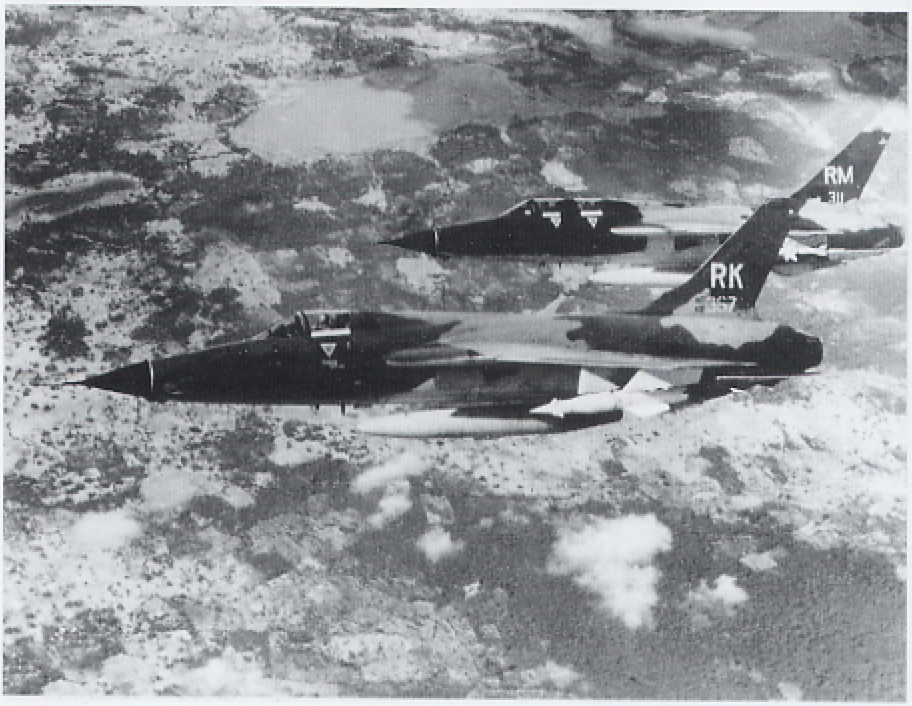
F-105D aircraft from batches 1, 2, 3 and 4 converted to Thunderstick II standard.
Examples: 60-0455, 60-0458, 60-0464/65, 60-0471, 60-0475, 60-0480, 60-0490, 60-0493, 60-0500, 60-0513, 60-051760-0521, 60-0527/28, 60-0533, 60-5375/76, 61-0044,61-0047, 61-0063/64, 61-0074/75/76, 61-0080, 61-0096, 61-0100, 61-0110, 61-0161.

F-105F aircraft from batches 5, 6 converted to F-105G Wild Weasel.
Examples: 62-4416, 62-4421/22/23/24/25, 62-4427/28, 62-4434, 62-4436 62-4438/39/40, 62-4442, 62-4444, 62-4446, 63-8265/66, 63-8274/75/76, 63-8278, 63-8284/85/86, 63-8290/91/92, 63-8296, 63-8300/01/02/03/04/05/06/07, 63-8311, 63-8313, 63-8316, 63-8318/19/20/21, 62-8326/27/28, 63-8332/33/34/35/36, 63-8339/40, 63-8342, 63-8345/46/47/48, 63-8350/51, 63-8355, 63-8358.

Ryan's Raiders/Commando Nail
62-4419, 62-4429, 63-8263, 63-8269, 63-8274, 63-8275, 63-8276, 63-8277, 63-8278, 63-8293, 63-8312, 63-8346, 63-8353.

Combat Martin
62-4432, 62-4435, 62-4443, 63-8268, 63-8280, 63-8291, 63-8313, 63-8336, 63-8337

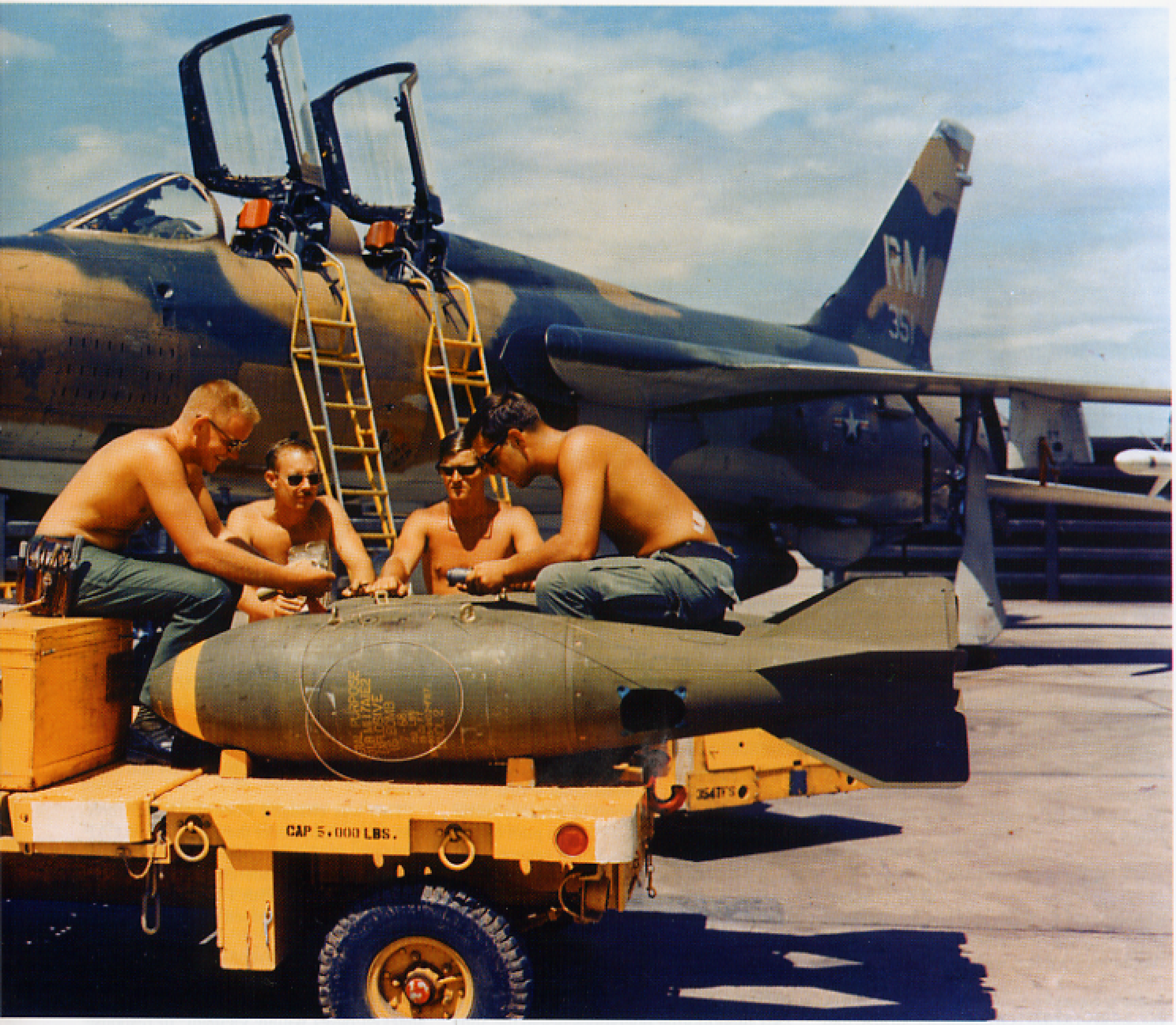
Armed with AGM-12 Bullpups these two Thunderchiefs from the 355th TFW are looking for targets. in Vietnam. Both the single and two-seat versions of the F-105 were employed on attack missions during the various bombing offensives. (via Dennis R.Jenkins)



allocated to the USAF Demonstration Team, the Thunderbirds, in May 1963. The nine airframes allocated to the team had originally been on the inventory of the 4th TFW which was in the process of re-equipping with the more advanced F-105D.

The selected aircraft were flown back to the Republic factory at Farmingdale for refurbishment and modification. This entailed the removal of the Gatling gun and its associated ammunition tank plus the complete MA-8 fire control system. Replacing the more warlike equipment were a pair of 50 gallon diesel oil tanks for smoke generation. The change of role meant that the removed gun had to be replaced by ballast to maintain the aircraft's centre of gravity. The bomb bay also underwent some changes with one part being given over to a baggage compartment whilst extra communications to cater for civil airfields was installed.

One of the greatest modifications was the replacement of the original flight control system by the FC-5 as installed in the F-105D. This in turn was further modified when the operating limits of the flaps were



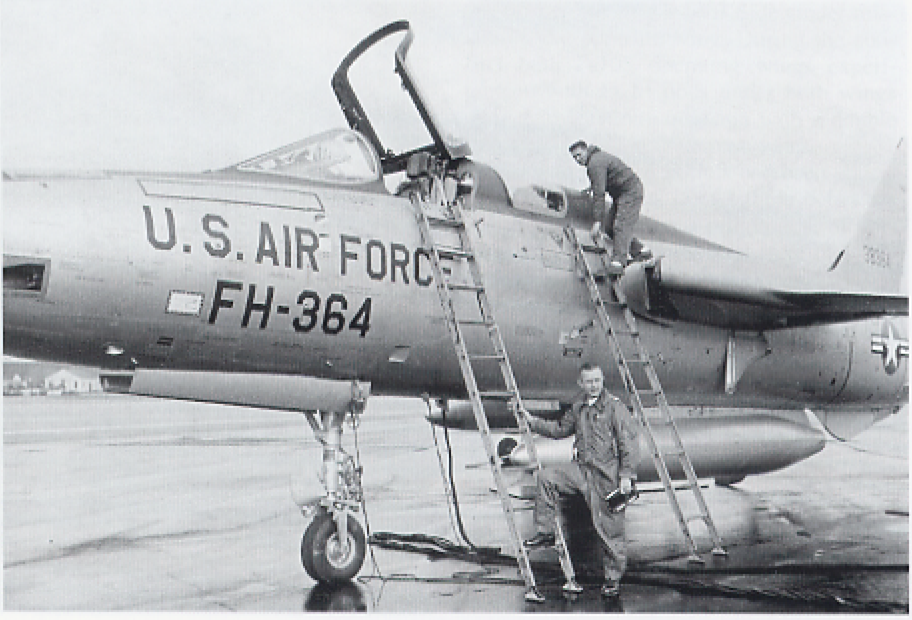
Above: With armourers waiting F-105F, 63-8351, sits in its revetment at Takhli AB before its next mission. The aircraft was later scrapped at George AFB in 1978. (USAF) Below: F-105F 63-8364, undergoing pre-flight checks by the aircrew. This aircraft was one of the last to be manufactured. (Dennis R.Jenkins)

altered. Under the new mode the flaps could operate up to speeds of 500 knots instead of the normal limit of 280 knots.

Structurally changes were kept to a minimum and involved four of the nine airframes having stainless steel leading edges to their fins. This enabled any of the four to fly in the slot position without suffering the degradation that would afflict a standard alloy item.

As the conversion process was quite extensive it was not until 16 April 1964 that the final aircraft was delivered to the team's base at Nellis AFB. This final delivery enabled the team to start that year's display season with a full complement of aircraft. However on 9 May, only six shows into the season, disaster struck. Just as Captain Gene Devlin was approaching to land after the show at Hamilton AFB the aircraft disintegrated at the bomb bay bulkhead. The cause was discovered to be a failure in the fuselage top splice plate at the junction of the bomb bay and forward fuselage.

The first action taken was to ground the F-105B fleet throughout the USAF, the second was to transfer the Thunderbirds to fly the F-



F-105F 63-8309 of the 508 TFG based at Hill AFB, Utah formates on another two-seater during a local exercise. (via Dennis R.Jenkins)

100 Super Sabre. In response to the crash the USAF initiated Project Back Bone which required the complete replacement of the original splice plate with a modified item. Once the repairs had been completed those aircraft allocated to the Thunderbirds were returned to normal service standards and became part of the 141st TFS of the New Jersey ANG.

VIETNAM OPERATIONS

Although the Thunderchief had its fair share of troubles and detractors it was the Gulf of Tonkin incident that was to change history's perception of the aircraft forever. In response eight F-105Ds were despatched from Yokata AB in Japan to the RTAF base at Korat arriving on 9 August 1964. Their official published mission was that of CAP in support of rescue missions to recover downed pilots operating over Laos. The unofficial mission was in support of CIA sorties where air support was required.

On one of the Thunderchief's first missions into Laos in support of a rescue sortie to pick up a downed T-28 Trojan pilot one of the aircraft was hit by a 37mm cannon shell fired by Pathet Lao guerillas. The ensuing damage started a fire in the engine compartment which the pilot managed to extinguish by climbing to 39,000 ft which starved the conflagration of oxygen. With the fire under control the pilot brought the damaged aircraft back to Korat.

Six months after operations began the 36th TFW moved its base of operations to Takhali RTAB. More reinforcements were to arrive in Thailand in August 1965 as part of Operation Two Buck. The aircraft came from the 4th TFW whilst others from the 23rd TFW had moved into the USAF base of DaNang, Vietnam, in August 1964. Two other wings the 8th and 18th TFWs also rotated their squadrons in and out of the combat zone between August 1964 and early 1966.

This was changed when the F-105 force was reorganised under the control of PACAF when two permanent wings were established to control Thunderchief operations. Numbered as the 355th TFW and the 366th TFW they were based respectively at Takhali and Korat.

Throughout 1964 F-105 combat operations were confined to Laos although this altered in February 1965 when Viet Cong forces attacked bases within Vietnam. In response President Johnson authorised Operation

Awaiting departure from Takhli AB in Thailand is this F-105G 63-8321. Armed with an AGM-45 Shrike missile the aircraft was later written off in March 1978. (USAF)

Hidden away in its Vietnam revetment this F-105D is having its ammunition drum refitted before yet another sortie. (via Dennis R.Jenkins)

Flaming Dart which cleared USAF forces to attack targets in North Vietnam.

On 8 February the F-105s based in the South East Asian theatre of operations carried out their first attacks north of the DMZ. The chosen target was the Dong Hoi Army Complex, this being followed two days later with the Viet Cong launching an attack against Qui Nhon during which 23 US personnel were killed. This caused a further escalation of hostilities which culminated in a series of integrated strikes against targets in the panhandle area of North Vietnam which were designated Flaming Dart II. These missions continued relentlessly until a cessation was ordered on 2 March 1965. On that date all the various different small scale operations that had been underway were to coalesce into Rolling Thunder.

Designed to hit a selection of objectives on a predetermined list the idea was to strike at targets in response to a sliding scale of aggression displayed by the North Vietnamese south of the DMZ. The list was compiled on the orders of the Joint Chiefs and was restricted to the zone between the 17th and 19th parallels and would include POL dumps, bridges, barracks, truck parks and ammunition dumps. Although both the US Navy and USAF would be carrying out strikes above the DMZ the primary attack aircraft for the USAF would be the F-105.

Rolling Thunder operations were to last for most of 1965 with the two wings of Thunderchiefs bearing the brunt of the missions and the losses. Although the F-105 was a fairly tough aircraft one single hit could cripple the jet. One of the consequences of such damage was the disabling of the primary flight control hydraulics, the same could also happen to the secondary system should the hit be in close proximity to the pipe line runs. The result normally meant a total loss of flight control with the slab stabilisers defaulting to the up position. This would then put the stricken Thunderchief into a high speed nose dive.

To correct this Republic designed a modification which was mechanical in nature. When the system failed a manual lock operated by the pilot would hold the stabilisers in the neutral position whilst the remaining amount of aileron roll control would enable the damaged aircraft to make a safe egress out of the danger area. At a later date a third hydraulic system well clear of the others was installed by the manufacturers, this was connected to the pitch control system and would ensure that some measure of control was still available.

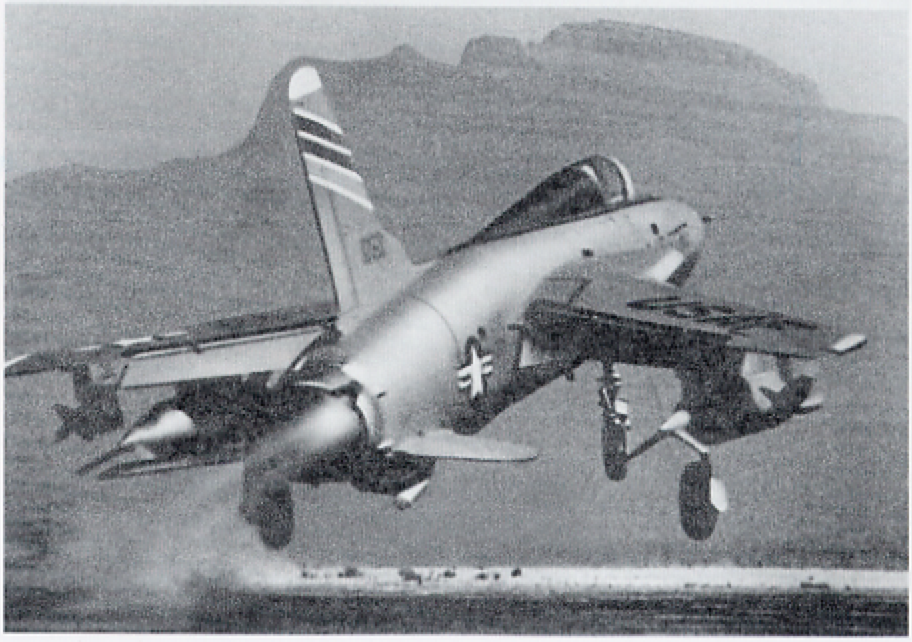
WARTIME MODIFICATIONS

As the war progressed further methods of defeating the enemy and protecting the big fighter-bomber became necessary. The first of these modifications was the RHAW system which could detect the launch signals of a SAM. The manufacturer of this black box was Applied Technologies Inc whose product was known in USAF parlance as the AN/APR-25. Allied to this monitor was a WR-300 Launch Warning receiver which later became known as the AN/APR-26. The external mountings for the RHAWS detectors were located on the strike camera fairing under the nose and on the trailing edge of the fin whilst the pre-amp occupied small blisters on each side of the fin. The indicator for the RHAWS was a small CRT display located on the upper right hand side on the main pilot's panel. The display on this screen would indicate the nearness of the emitter and its threat strength, the more activity, the greater the threat.

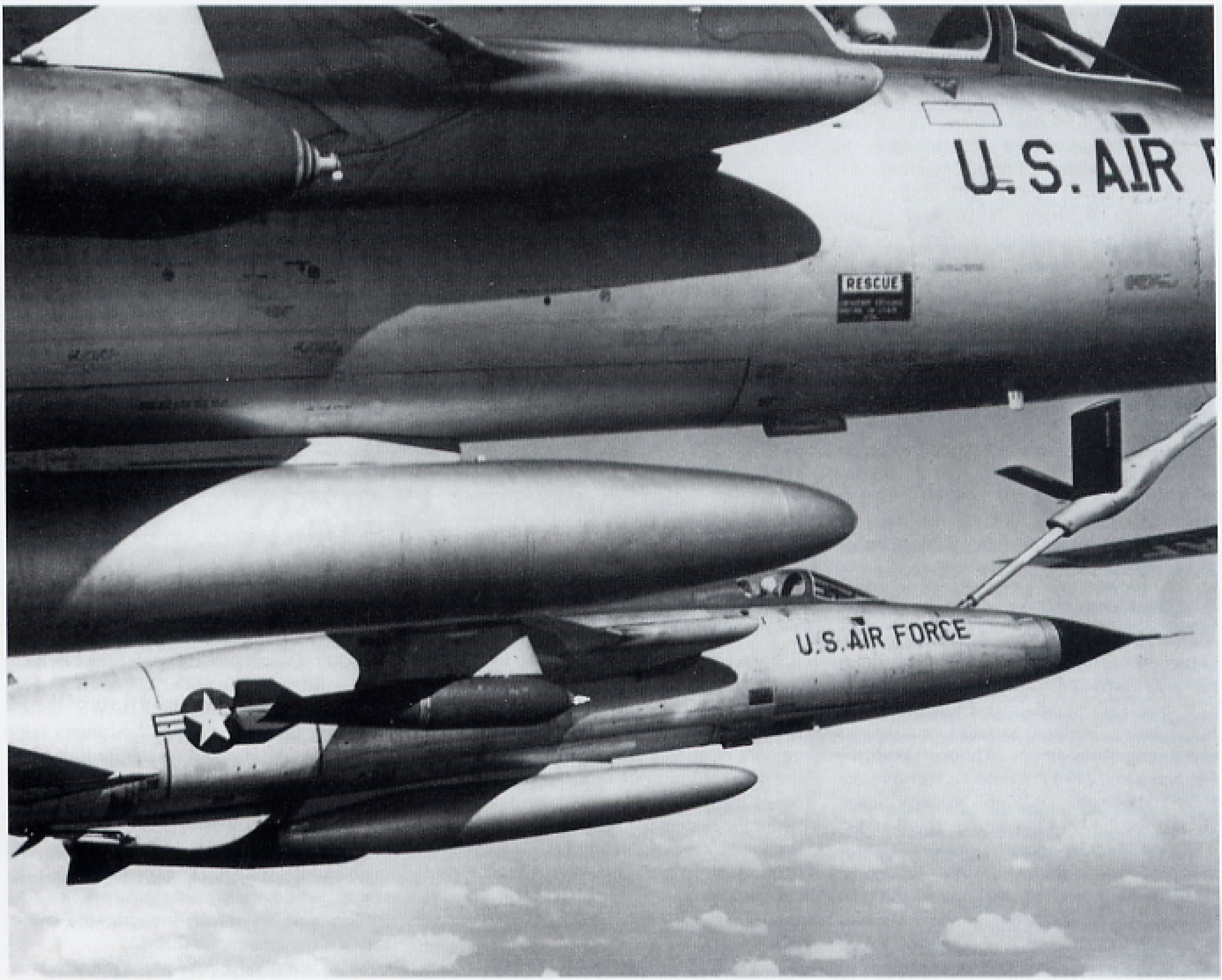
Also installed at the same time was a Threat Display Unit which became active at the point of a SAM launch. This normally meant that the pilot would begin to scan the area visibly to detect the launch point and take evasive action.

To further aid Thunderchief pilots heading into North Vietnam HQ. 7th AF began to insist that all aircraft entering the zone had ECM pods installed. On the Thunderchief this meant losing a pylon for the pod. However this was later counterbalanced by the carriage of an AIM-9B Sidewinder missile on the opposite wing. During the conflict both F-105 operating wings experimented with ECM pods under both wings and on at least one occasion with a double missile installation under one wing.

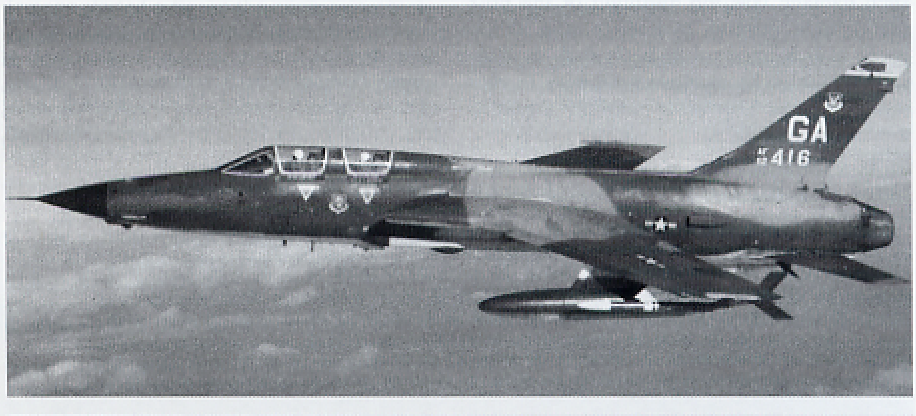
Whilst the Thunderchiefs had been undergoing modifications to suit them better for their role in Vietnam, a programme of normalisation in the support structure had also been underway. The two original wings operating out of Thailand had in effect been replaced by two more suited to the TDY nature of the war. Those pilots and aircraft flying out of Korat came under the control of the 6234th TFW(Provisional) whilst the 6235th TFW was in control at Takhli. The former organisation controlled the 35th and 80th TFS , to which was later added the 12th



Using full burner this F-105D of the 36th TFW based at Bitburg but on detachment to Nellis AFB, lifts off laden down with bombs and fuel tanks during a Red Flag exercise. (A.W.Hall)



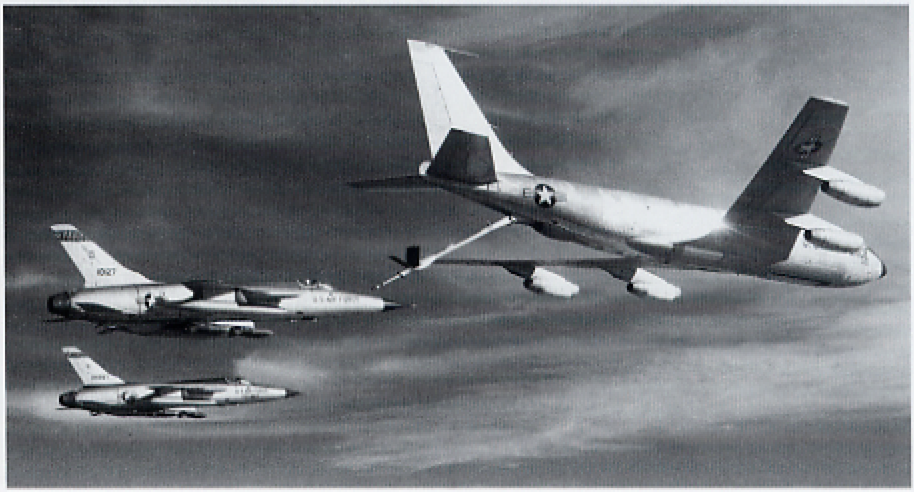
Above: In-flight refuelling was a vital part of the Thunderchief's operational capability as these two bomb laden aircraft show. Right: The F-105G was the last version in service with the USAF with the 35th TFW based at George AFB, California. (A.W.Hall)



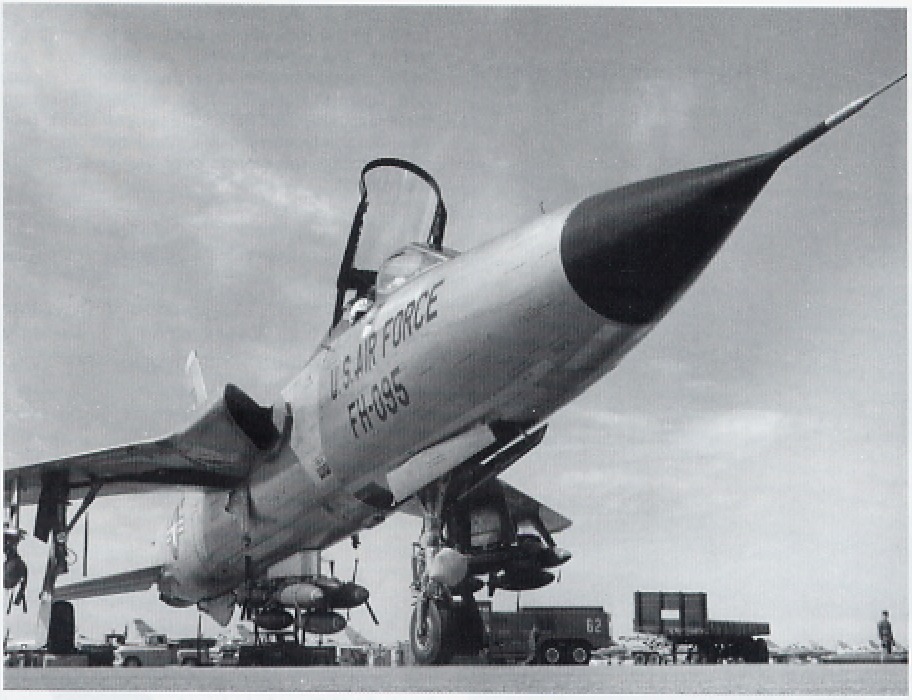
and 67th from Kadena, whilst the latter wing had two units from the 4th TFW assigned plus the 354th TFS.

This situation continued until late 1965 when the 355th TFW replaced the 6325th TFW at Takhali whilst at Korat the 388th TFW became the designated headquarters. For the next two years these two wings would carry out many routine operations against targets in North Vietnam. Although the pilots rotated in and out after their tours the aircraft stayed on. But such were the losses during late 1966 and early 1967 that the Combat Crew Training Wing in the United States lost most of its aircraft almost overnight as their machines were flown to the Republic factory for extensive upgrading and rapid despatch to Vietnam.

Possibly the most dangerous place to fly an F-105 was over Route Pack 6 which covered the north east section of the country. It included such juicy targets at the harbour at Haiphong which was heavily defended thus the high threat assessment of six - the high-



Complete with TAC badges on their fins these F-105Ds of the 334th TFS/ 4th TFW are awaiting refuelling from their accompanying KC-135 tanker. (via Dennis R.Jenkins)



Twelve 750lb bombs are fitted to the pylons of this F-105D, 61-0095. The aircraft later went on to serve with the 49th TFW. (via Dennis D.Jenkins)

est possible. Also within this zone was RP-6A , the northern capital Hanoi. Surrounding this city were the most intense and sophisticated anti-aircraft defences in the world all of which were radar-guided.

To reach Hanoi it was necessary for the Thud pilots to use the Red River as a waypoint on their way 'downtown'. As the Thunderchiefs turned towards the north side of the river they encountered a small mountain range behind which was the city. Day after day the F-105 pilots flew their aircraft over this rocky out crop and on a daily basis at least one Thunderchief would be shot down. This small insignificant rock barrier later entered the annals of USAF history under the name 'Thud Ridge' as the surrounding area was littered with the wreckage of downed F-105s.

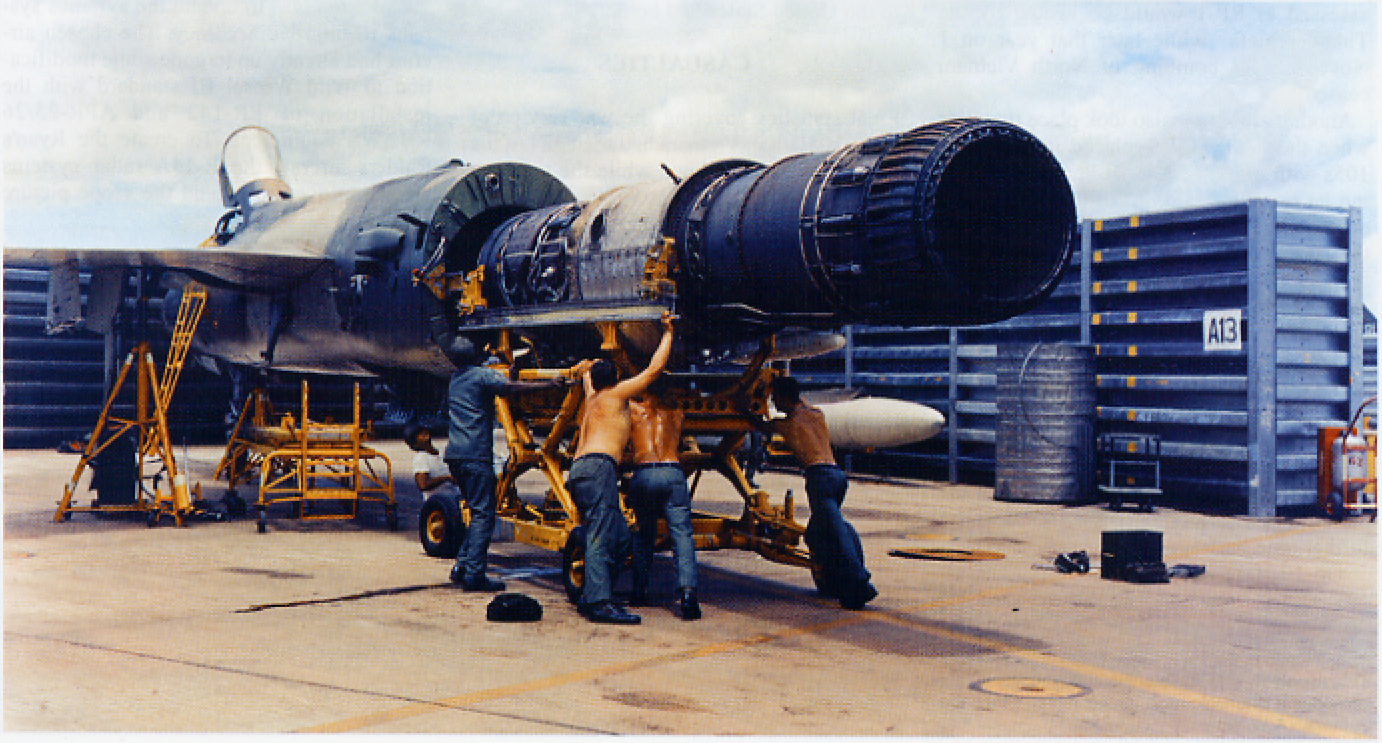
The normal weapons load for such a mission entailed the fitting of a centreline MER upon which was normally hung six 750 lbs M117 GP bombs. Occasionally a pair of 2,000 lbs GP bombs would be carried on each outer pylon whilst the inners toted a pair of 600 US gallon drop tanks. This load could of course be modified to suit the circumstances thus the attack on the heavily fortified Paul Doumer bridge saw the F-105s armed with 3,000 lbs GP bombs on the outer pylons. The use of such weapons had been dictated by the anti-aircraft defences that were causing considerable losses amongst the attackers. The theory behind the use of such powerful weapons was that destabilisation of the foundations would be as good as a direct hit. It was during this period that the F-105s also began using the AGM-12B Bullpup missile although its performance under combat conditions was not as good as the results achieved under test.

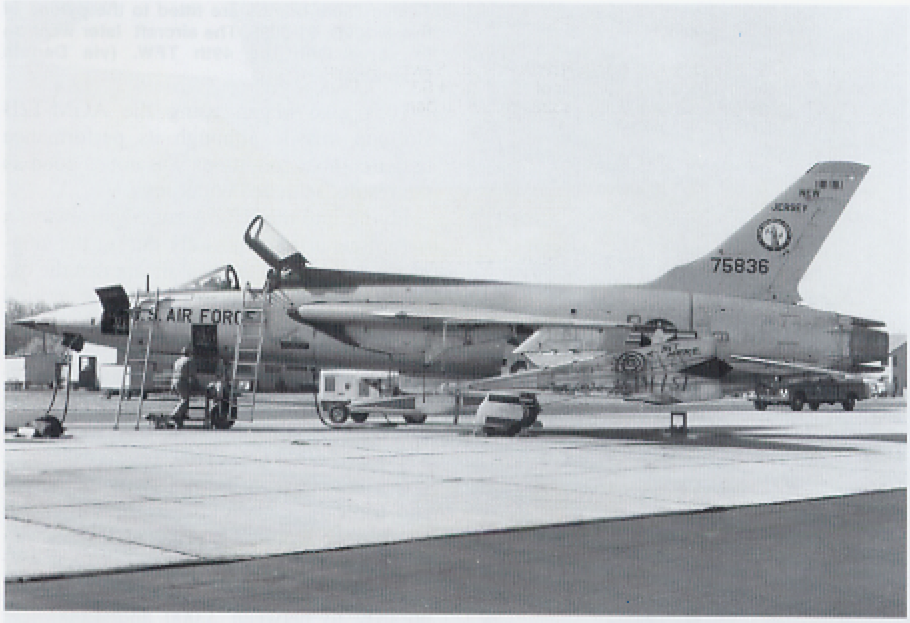
Flying into the RP-6A zone was always a hazardous affair especially during the summer months when the heat meant that the big Republic fighters had to leave the ground with a light fuel load. Once airborne they were refuelled by waiting KC-135 tankers before turning north. On penetrating the air space of North Vietnam the aircraft would be travelling at a height of 1,500 feet and at a speed of 600 knots. This was considered a safe zone between the radars of the SAMs and triple A. Once close to the target full afterburner would be engaged for the run down the Red River. Close to the final way point the aircraft would be pitched up temporarily to between 3,000 and 4,000 feet before half rolling over and diving at the target. Upon weapons release the Thunderchief would be flown hard to get it clear of the various fire zones.

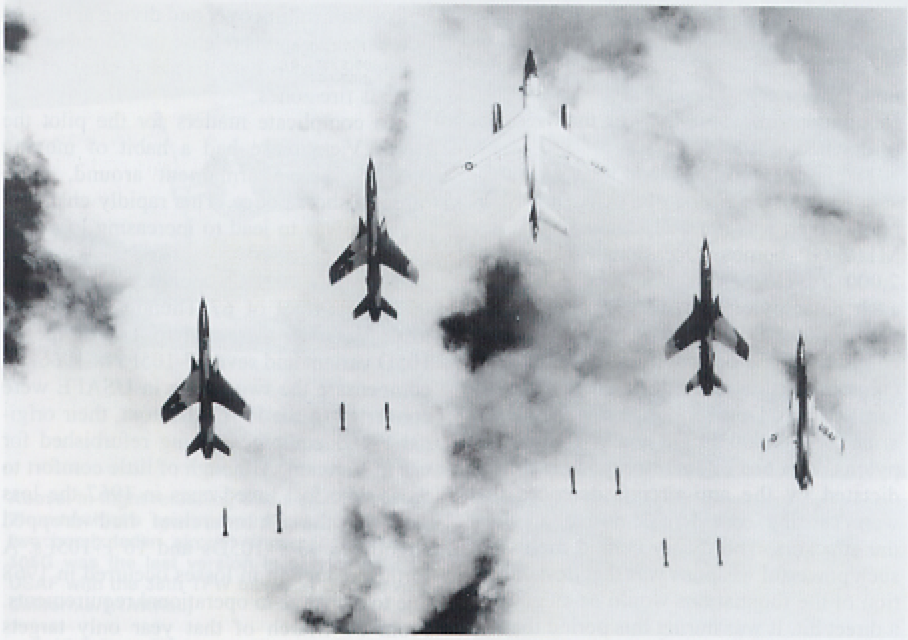
To complicate matters for the pilot the North Vietnamese had a habit of moving their defensive armament around, quite often at short notice. This rapidly changing scenario was to lead to increasing losses as the war progressed.

During the various operations carried out in 1965 a total of 67 Thunderchiefs were lost. This was increased to 117 of the F-105D variant and seven F-105Fs in 1966. To compensate the two wings in USAFE were converted to the F-4C Phantom, their original F-105 equipment being refurbished for use in Vietnam. Although of little comfort to those who lost loved ones in 1967 the loss rate for the Thunderchief had dropped slightly to 93 F-105Ds and 16 F-105Fs. A further reduction in losses occurred in 1968 due to a change in operational requirements. From 31 March of that year only targets

To change an engine the rear fuselage was separated at the break point and rolled clear on a transport dolly. After that another one would be rolled in to remove the engine, then the process would be reversed. (via Dennis R.Jenkins)







Left: One of the duties carried out by the F-105Bs of the New Jersey ANG was that of target towing. The winch pod is on the centre line whilst the dart is carried on the port outer pylon. (via Dennis R.Jenkins) Lowerleft: Following their lead ship, an EB-66 Destroyer, these four Thunderchiefs carry out a blind bombing mission through the clouds over Vietnam. (Dennis R.Jenkins)

assessed as RP-1 would be visited by the Thunderchiefs while later that year on 1 November all bombing of North Vietnam ceased.

Another alteration also took place that year when the 388thTFW replaced its weary F-105s with brand new F-4E Phantoms, passing its remaining aircraft to the 355th TFW at Takhali. Losses for that year totalled 37 of the 'D' version whilst two-seater losses had increased to nine.

For the Thunderchief and its pilots the areas they were ordered to attack consisted of parts of the Ho Chi Minh trail that threaded its multifarious way south through Laos and Cambodia. As their attacks increased so did the air defences of the NVA which were used to protect the various arms of the trail. Losses for this final phase of combat for the period 1969-70 totalled 21 F-105Ds and a further nine F-105Fs.

On 10 November 1970 the venerable F-105 left the Vietnam war for good when the last aircraft departed Takhli and headed back to the United States and home.

CASUALTIES

Final statistics covering the war service of the F-105D/F in Vietnam had seen 334 of the 610 F-105Ds shot down while the two-seat 'F', which was normally employed in a similar manner to the single-seater had seen 51 of the total production run of 143 destroyed in combat.

Of these losses the greater majority came from AAA with SAMs accounting for only 32 Thunderchiefs. Surprisingly the North Vietnamese Air Force managed to shoot down 16 of the type during the period 1965 to 1968 although the F-105 pilots managed to destroy 27.5 MiGs in return as the half was shared with an F-4 Phantom.

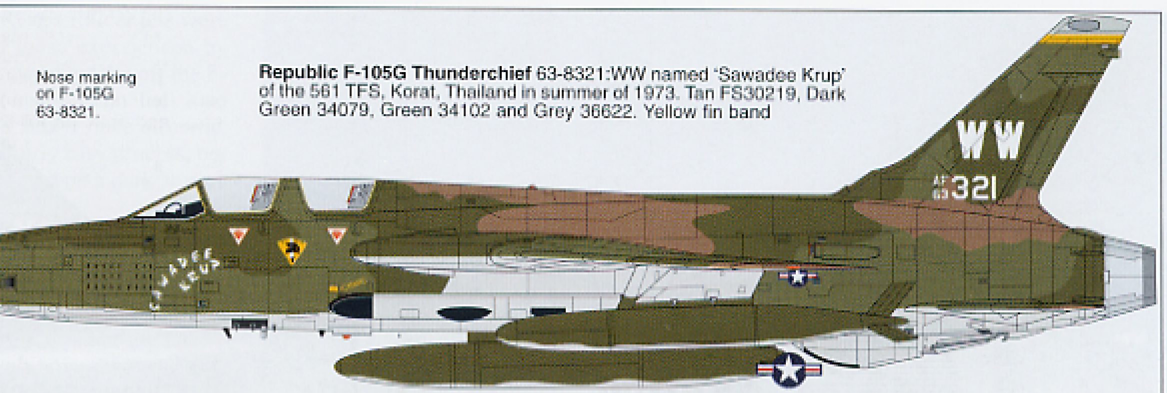
Of the shoot downs possibly the most incredible combat concerned an F-105F, 63-8320, which is credited with downing three of the opposition during one sortie. The first kill was made with the Gatling Gun, the second was hit by an AIM-9 Sidewinder whilst the final MiG destroyed ran into the fully loaded MER and six bombs as they dropped clear of the aircraft.

Although the F-105F gained a measure of fame in the bombing role it was in a later guise that it was to help change the face of aerial warfare. In the early months of 1967 the Rolling Thunder missions were being hampered by bad weather and poor visibility during night missions. The commander of PACAF, General John D Ryan, realised that to prosecute the war against Hanoi the two F-105 wings would need some help to improve their sortie rate and strike accuracy. At that time there was no dedicated all weather attack aircraft available in Vietnam as the F-4E Phantom and F-111 were still under development.

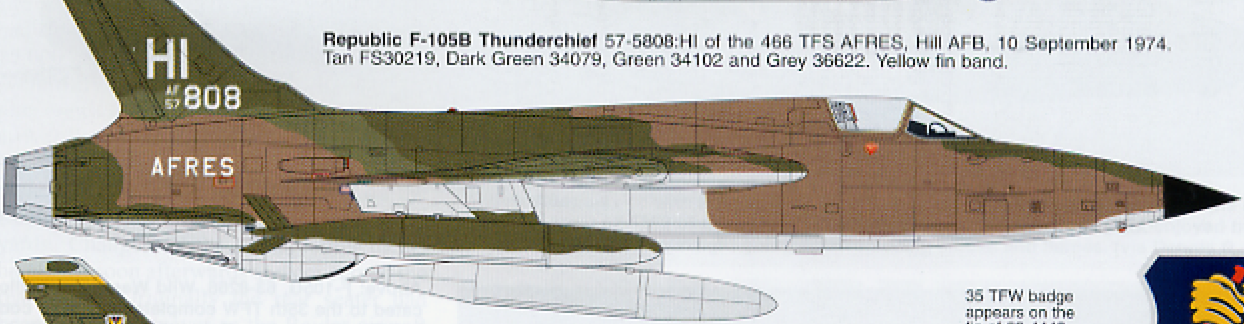
The answer in the short term was to modify four F-105F two-seaters under a programme code named Northscope, later renamed Commando Nail. As this was one of the primary missions of the Thunderchief the solution was to update the avionics systems to improve accuracy. The chosen aircraft had already undergone some modification to Wild Weasel III standard with the installation of ER-142 and APR-25/26 RHAWS equipment. To create the Ryan's Raiders aircraft the R-14A radar systems were improved to extend the scope picture

Shock wave moisture is apparent from the heated air around this fast, low-flying F-105D, 61-130, provides a dramatic high speed pass before the camera. (A.W.Hall)

Nose marking on F-105G 63-8321.

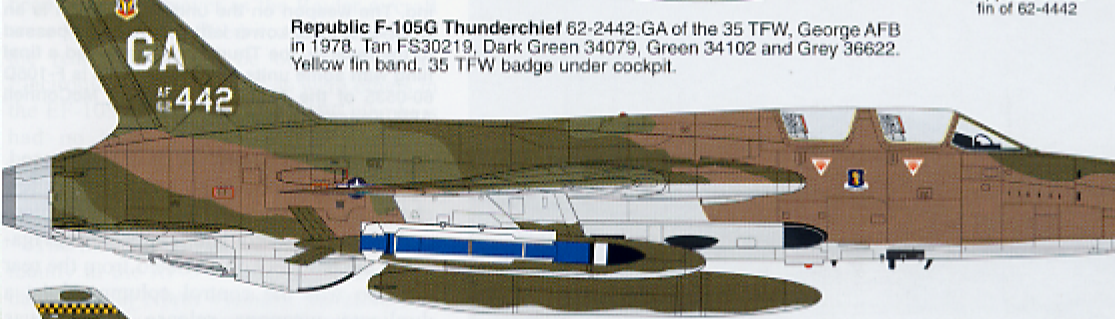


Republic F-105G Thunderchief 63-8321:WW named 'Sawadee Krup' of the 561 TFS, Korat, Thailand in summer of 1973. Tan FS30219, Dark Green 34079, Green 34102 and Grey 36622. Yellow fin band



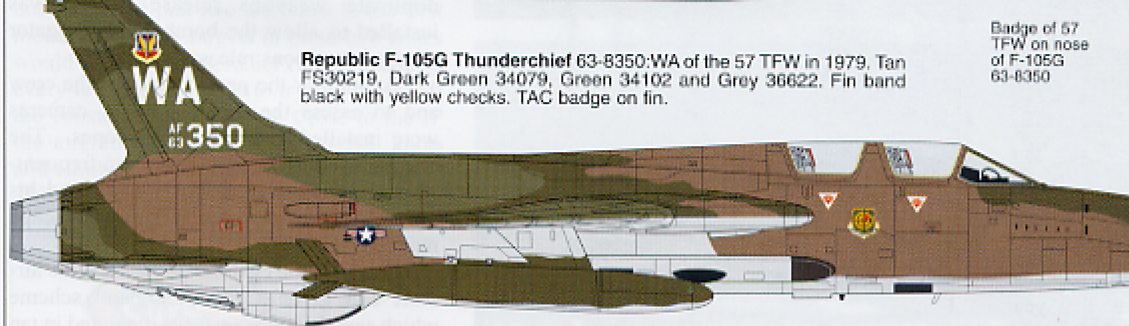
Republic F-105B Thunderchief 57-5808:HI of the 466 TFS AFRES, Hill AFB, 10 September 1974. Tan FS30219, Dark Green 34079, Green 34102 and Grey 36622. Yellow fin band.

35 TFW badge appears on the fin of 62-4442

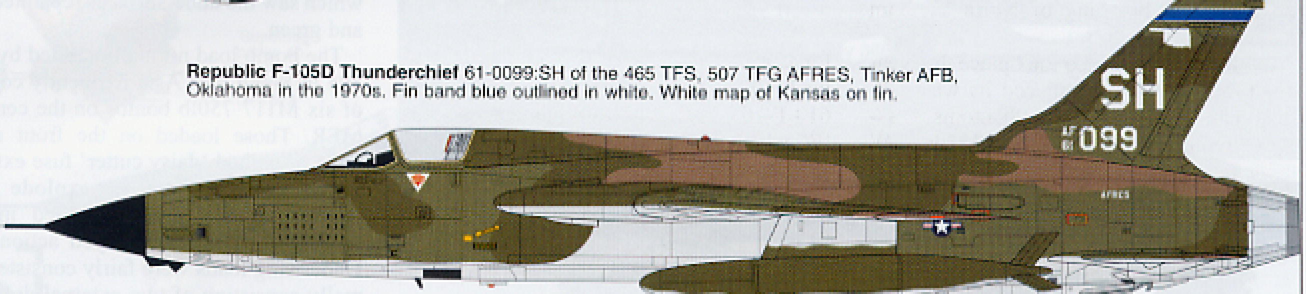


Republic F-105G Thunderchief 62-2442:GA of the 35 TFW, George AFB in 1978. Tan FS30219, Dark Green 34079, Green 34102 and Grey 36622. Yellow fin band. 35 TFW badge under cockpit.

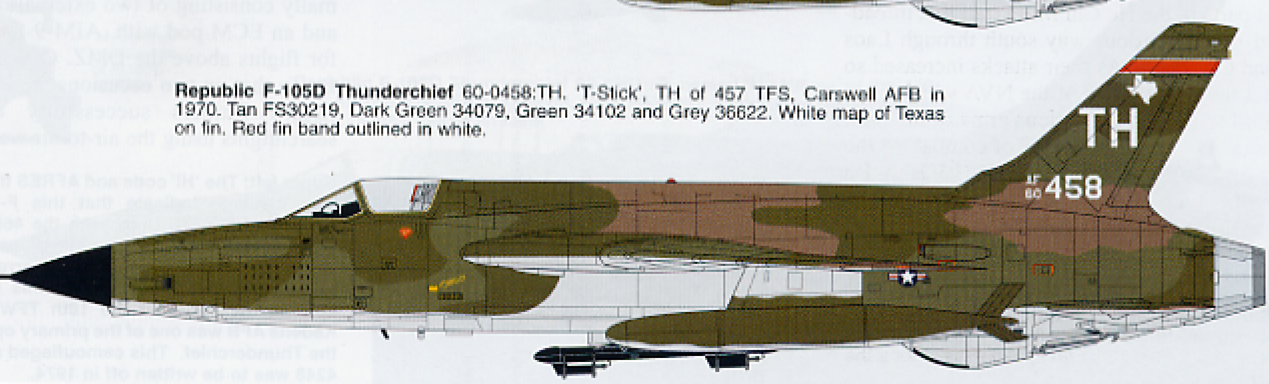
Badge of 57 TFW on nose of F-105G 63-8350



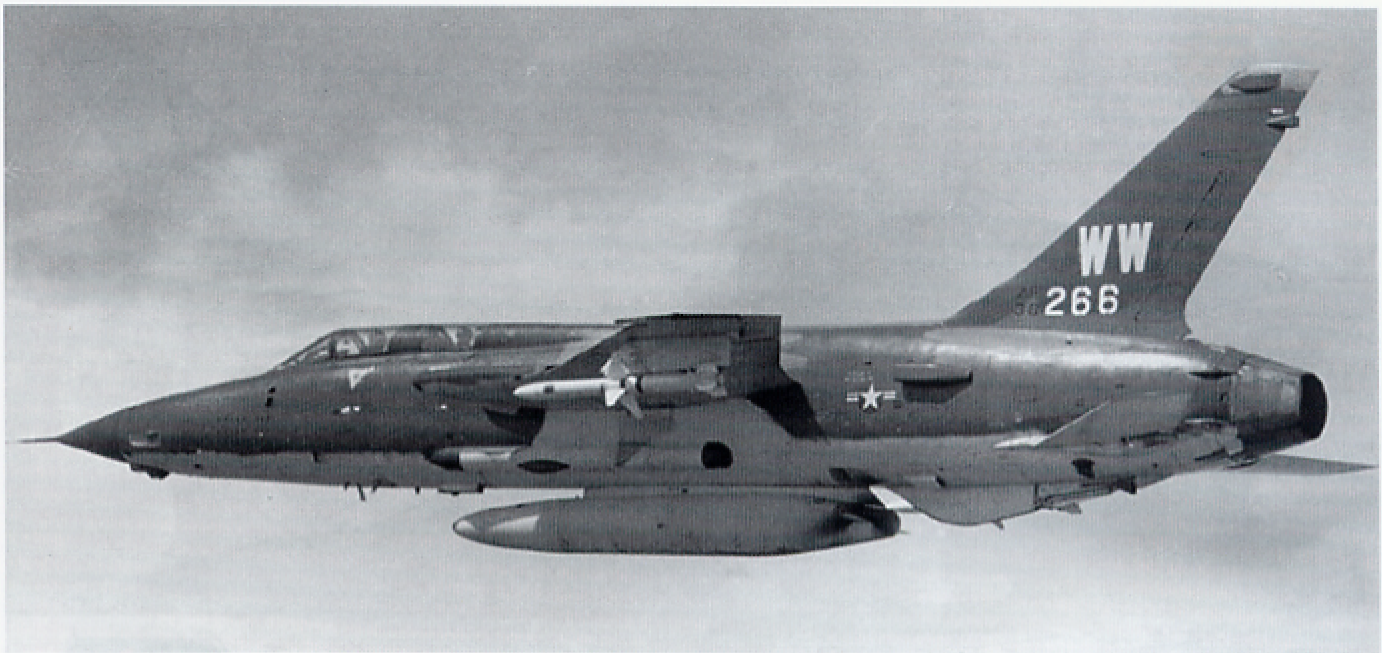
Republic F-105G Thunderchief 63-8350:WA of the 57 TFW in 1979. Tan FS30219, Dark Green 34079, Green 34102 and Grey 36622. Fin band black with yellow checks. TAC badge on fin.

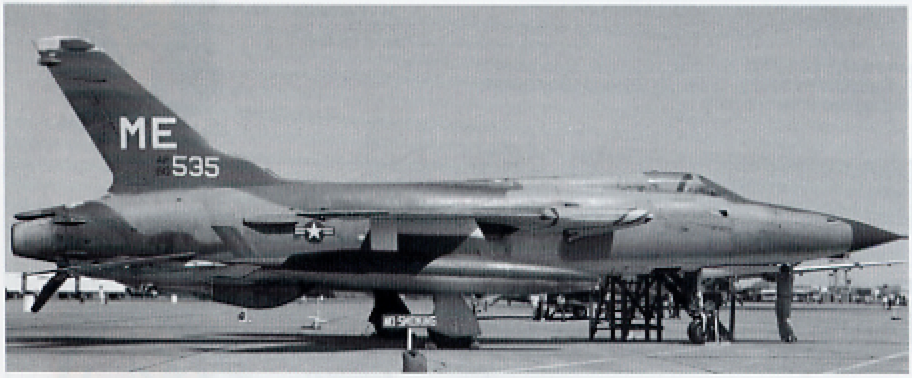


Republic F-105D Thunderchief 61-0099:SH of the 465 TFS, 507 TFG AFRES, Tinker AFB, Oklahoma in the 1970s. Fin band blue outlined in white. White map of Kansas on fin.



Republic F-105D Thunderchief 60-0458:TH, 'T-Stick', TH of 457 TFS, Carswell AFB in 1970. Tan FS30219, Dark Green 34079, Green 34102 and Grey 36622. White map of Texas on fin. Red fin band outlined in white.





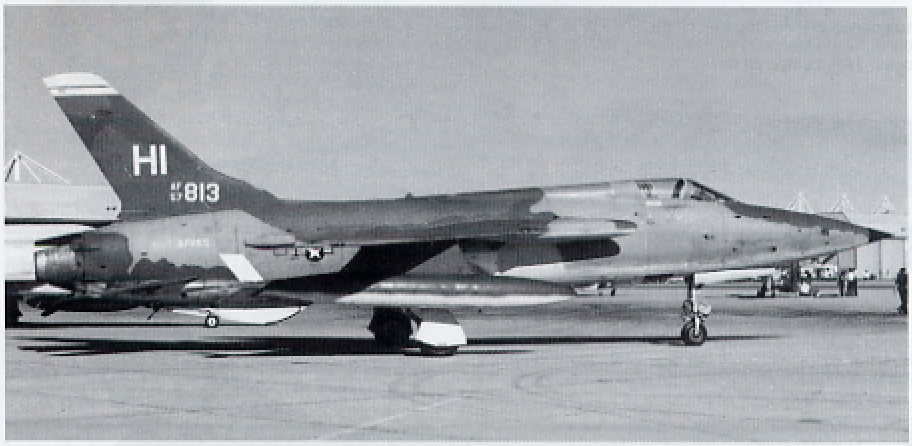
Above: F-105G, 63-8266, Wild Weasel, was allocated to the 35th TFW complete with 'WW' coding. The weapon on the underwing pylon is an AGM-45 Shrike. Lower left: Before being passed to the reserve, the Thunderchief enjoyed a final fling with some units in the USA. This is F-105D 60-0535 of the 23rd TFW based at McConnell AFB, Kansas. (A.W.Hall)

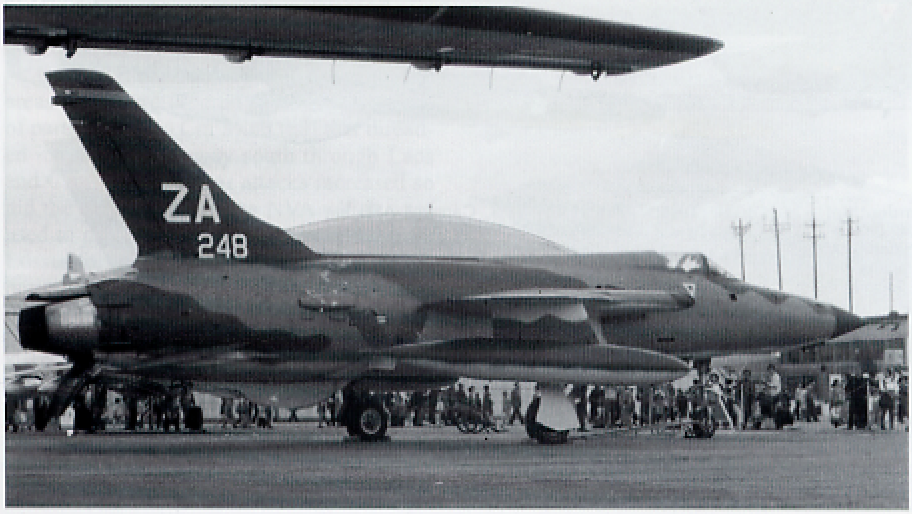
and generate a faster sector sweep speed. Internally the cockpits underwent a few changes to improve the interactive efficiency between the pilot and bombadier/navigator in the rear cockpit. Deleted from the rear position was the control column whilst a duplicate weapons release switch was installed to allow the bombardier/navigator to toggle weapons release.

To monitor the performance of the crew and to assess the bomb damage, cameras were installed over the radar scopes. The one installed in the pilot's position frequently suffered damage as the pilot moved his control column violently during escape manoeuvres.

To improve the chances of the crew the aircraft was given a modified paint scheme which saw the undersurfaces repainted in tan and green.

The bomb load normally carried by the F-105 in South East Asia frequently consisted of six M117 750lb bombs on the centreline MER. Those loaded on the front mounts quite often had 'daisy cutter' fuse extenders which caused them to explode above ground. Other weapons carried included bombs with 24-hour delayed action fuses. Underwing loads were fairly consistent normally consisting of two external drop tanks and an ECM pod with AIM-9 Sidewinders for flights above the DMZ. One interesting fact is that on two occasions the F-105Fs of Ryan's Raiders successfully destroyed searchlights using the air-to-air weapons.





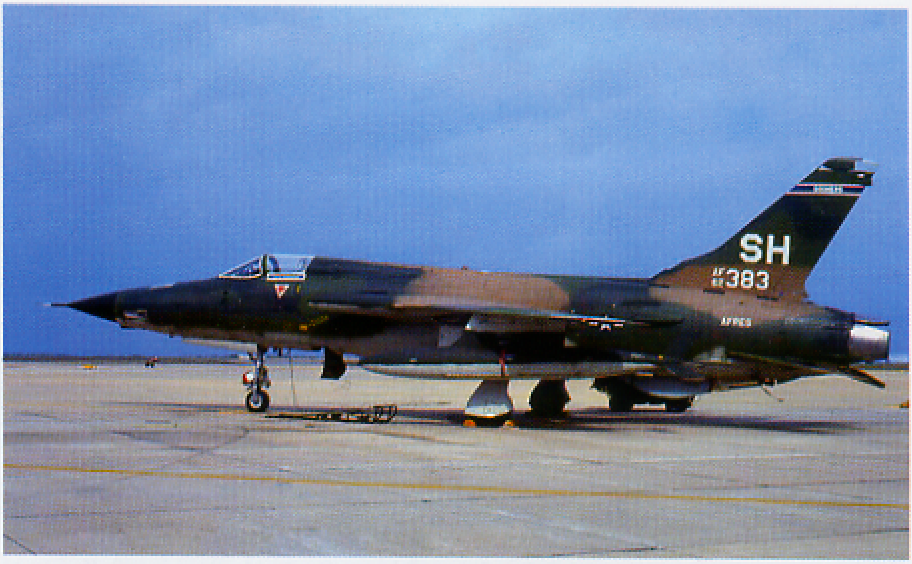
Upper left: The 'HI' code and AFRES titles on the rear fuselage indicate that this F-105B was based at Hill AFB, Utah, with the 466th TFS. It sports many of the 'D' modifications including the afterburner intakes and the arrestor hook under the ventral fin. (via Dennis R.Jenkins) Left: In the Far East the 18th TFW based at Kadena AFB was one of the primary operators of the Thunderchief. This camouflaged aircraft 62-4248 was to be written off in 1974.

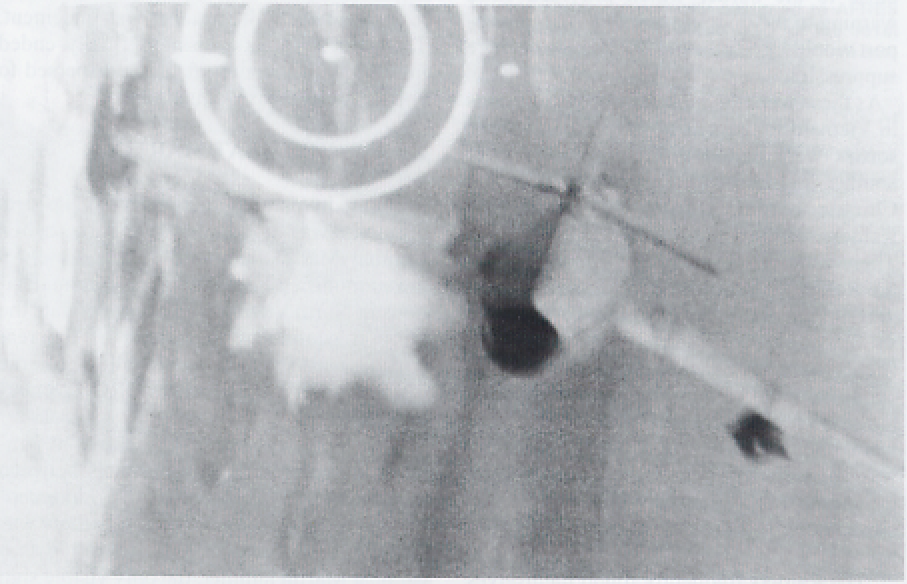
Operations for the Ryan's Raider jets were similar in practise to those experienced by other Thunderchief crews. On take off the F-105Fs departed with a minimum fuel load and topped up from a tanker once airborne. In daylight this was a fairly easy process, but at night it was difficult and on a dark stormy night it was very difficult.

Compensating for these conditions the Ryan's Raider aircraft took off at maximum gross weight using the entire runway. This reduced the number of refuellings to one over Laos. Whatever the weather the Ryan's Raiders operated at altitudes between 500 and 2,000 feet although their first operations had been at altitudes of between 10,000 and 15,000 feet.

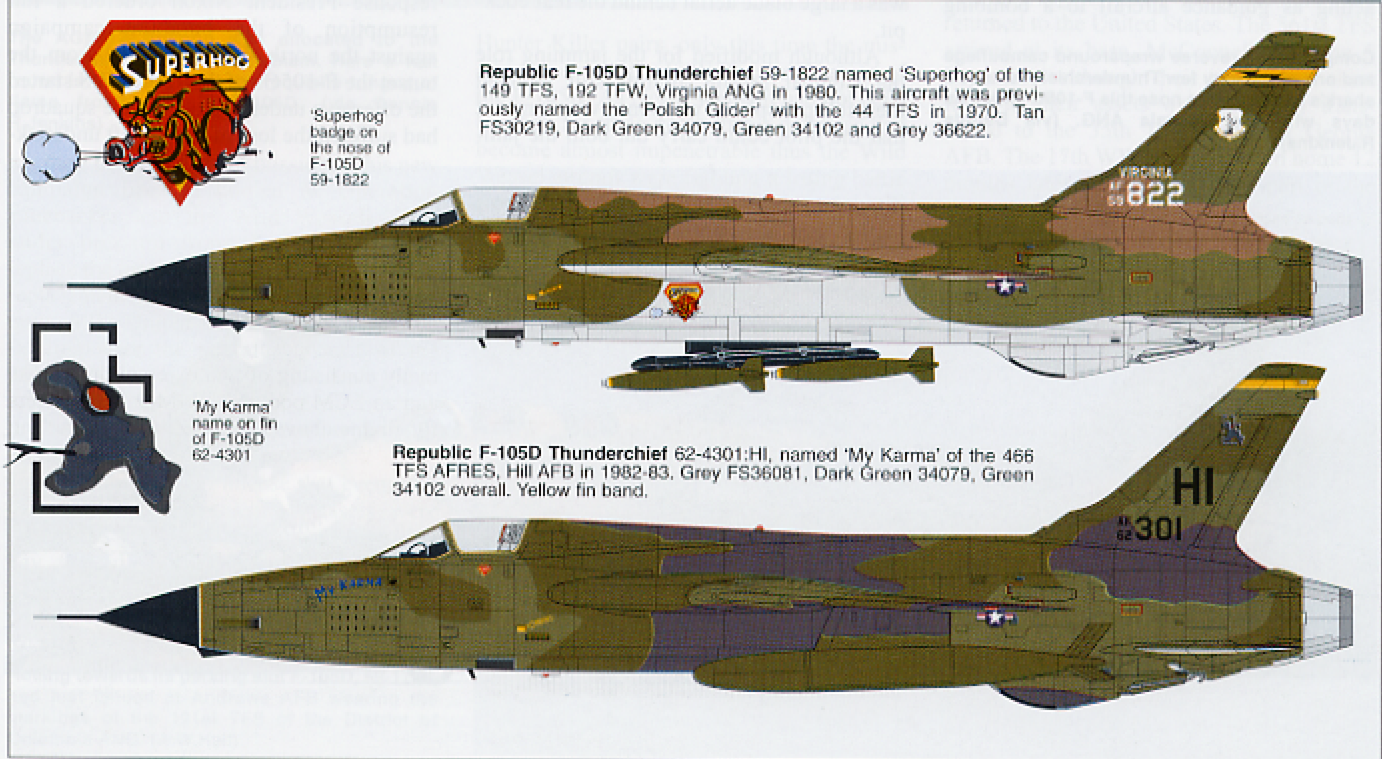
Delivery of the first four aircraft to Korat plus crews took place on 24 April 1967. On arrival they were assigned to the 13th TFS. Combat sorties began two days later with a night mission against the Ron Ferry on the Red River and the Yen Bai marshalling yards. Changes to the crew complements happened soon afterwards and concerned the rear seater. Originally the rear seater had been a pilot, however as the Raider aircraft were Wild Weasel fitted it was decided that the rear seat should be occupied by an Electronic Warfare Officer as were others in the EF-105F fleet. As these crew members had no bomb delivery experience they required extensive training to add to their skills. The first of these retrained EWOs arrived at Korat on 17 July.

The missions flown by the Raiders were mainly in the RP-5 and 6A areas, the most dangerous in North Vietnam, therefore it is not surprising that two were lost in the first month. Attacking targets in these two zones would see the Thunderchief changing course every few minutes or so to try and throw off the constant radar tracking. Close to the IP the aircraft would accelerate to 500 knots and climb to 1,000 feet for weapons release. This completed, the F-105F would acceler-





Above: After service with the frontline USAF the Thunderchiefs were passed onto the reserve units. This is F-105D 62-4383 of the 301st TFW of AFRES. (USAF) Below: A sight enjoyed by any combat pilot, a MiG-17 in the gunsight going down belching smoke and flames. (via Dennis R.Jenkins)



'Superhog' badge on the nose of F-105D 59-1822

Republic F-105D Thunderchief 59-1822 named 'Superhog' of the 149 TFS, 192 TFW, Virginia ANG in 1980. This aircraft was previously named the 'Polish Glider' with the 44 TFS in 1970. Tan FS30219, Dark Green 34079, Green 34102 and Grey 36622.

'My Karma' name on fin of F-105D 62-4301

Republic F-105D Thunderchief 62-4301:HI, named 'My Karma' of the 466 TFS AFRES, Hill AFB in 1982-83. Grey FS36081, Dark Green 34079, Green 34102 overall. Yellow fin band.

This F-105D, 60-0483 was assigned to the 36th TFW when it was photographed. Note the low set position of the fuselage star and bar. (A.W.Hall)

ate away from the target zone at full throttle to avoid the defences. Supporting the Raider aircraft would be a Douglas EB-66 orbiting close to the border which provided extra warning to the dodging bomber. Also in support would be a full Wild Weasel for defence suppression.

As these were the most hazardous missions in Vietnam it came as no surprise that these sorties were halted in October 1967 after another F-105F was shot down near the Chinese border. During this period the Raiders aircraft had flown 415 sorties. There followed a change of emphasis with the Raider's aircraft concentrating upon targets in the RP-1 zone which covered the southern part of North Vietnam. These flights were less hazardous as there was a certain amount of anti-aircraft fire although the stress levels were still high as the attacks were undertaken at night. Only one thing was missing from the schedule, in flight refuelling was dispensed with as Korat was close enough to the target zone not to need it.

The Raiders frequently found themselves acting as guidance aircraft to a bombing package of up to 16 other aircraft. Known as Commando Nail Papa these attacks were designed to take advantage of the improved radar of these aircraft and allowed missions to proceed when the weather was inclement. The Ryan's Raiders missions finally ended in 1968 with the aircraft being dispersed to normal Wild Weasel squadrons.

COMBAT MARTIN

Running in parallel to the Ryan's Raiders missions was a smaller operation called Combat Martin that used approximately a dozen modified F-105Fs to jam communications in North Vietnam. To accommodate the mission equipment the whole of the rear cockpit was stripped out to allow for the installation of a Hallicrafters QRC-128 jamming suite.

This array was principally aimed at jamming the communication channels between the ground controllers and the MiG interceptors under their control. Externally there was very little to show that an aircraft was a Combat Martin jammer, the only visible sign was a large blade aerial behind the rear cockpit.

Although modified for the jamming role the Combat Martin aircraft still retained their full panoply of weaponry which meant that the pilot could carry out both the jamming and bombing missions as the computer controlled system in the rear cockpit managed its own affairs. These sorties continued until November 1970 when the 355th TFW stood down. As with the Raiders aircraft the Combat Martin Thunderchiefs were reconfigured for the Wild Weasel mission.

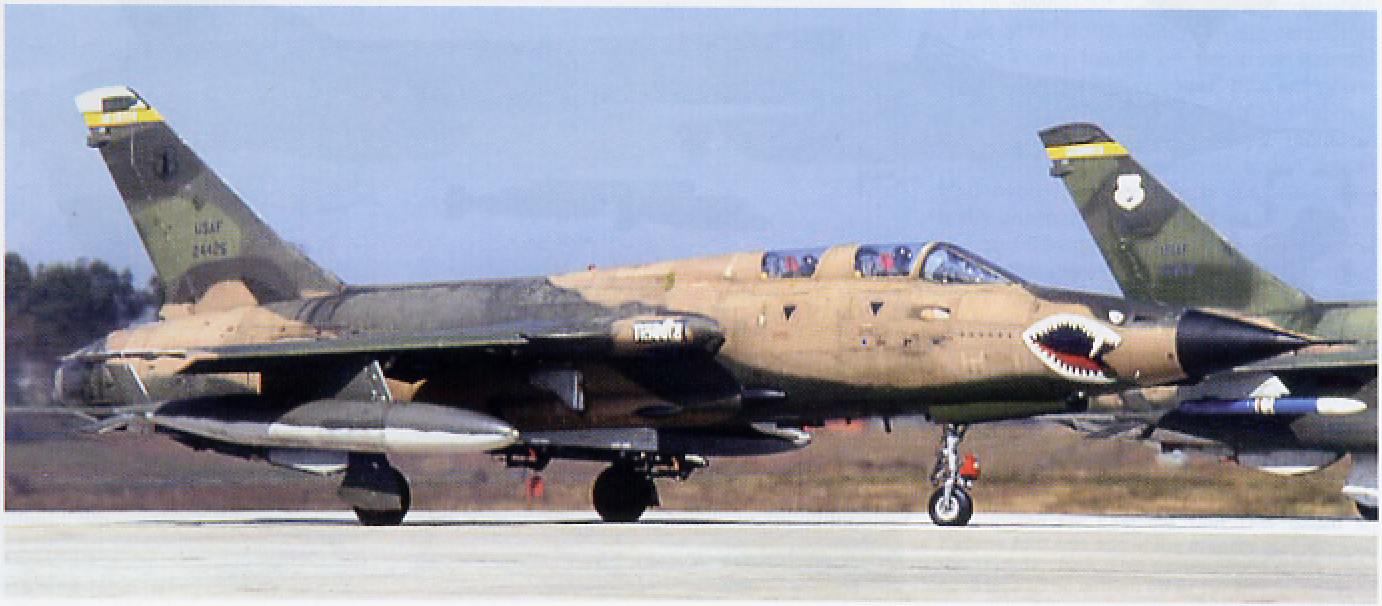
WILD WEASELS

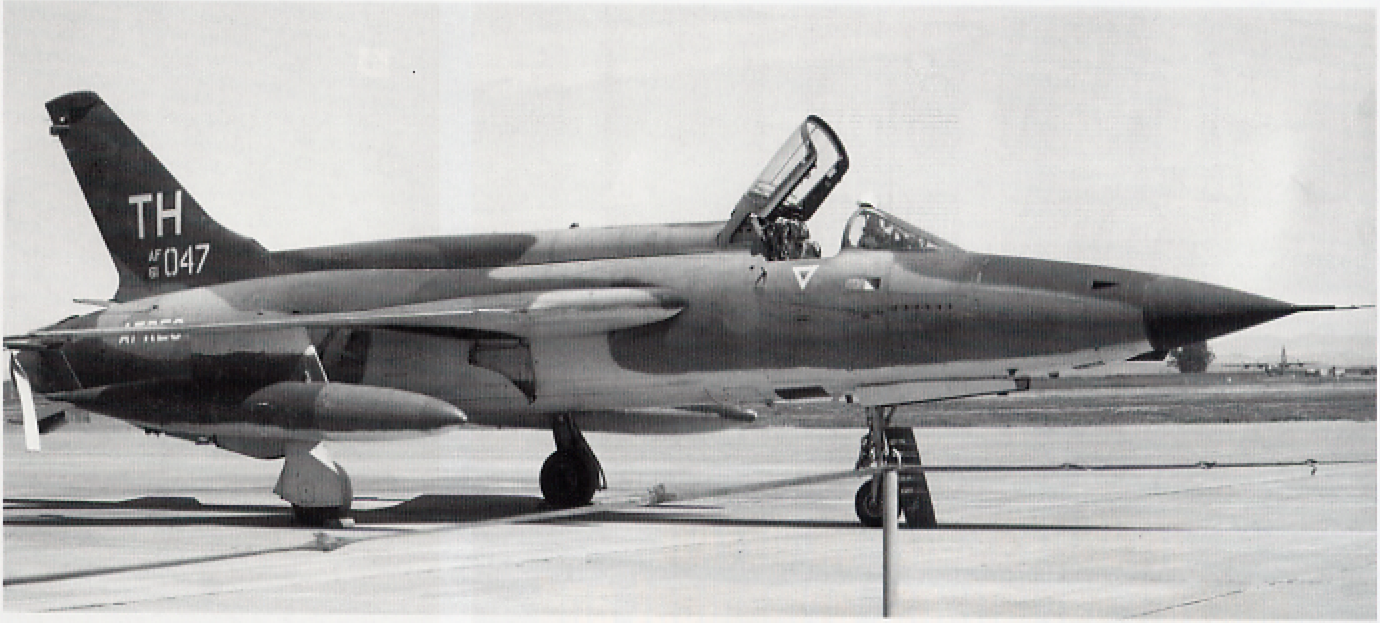
The Wild Weasel mission had come into existence when an RF-101 reconnaissance overflight had spotted the layout of a typical SAM site under construction near Hanoi. The first response to the threat was the development of ECM pods to be carried by individual aircraft for their own protection. The next phase was to develop a dedicated suppression and attack aircraft. This took the form of a modified F-100F where the EWO occupied the rear seat.

To create the EF-100F as it was unofficially known, contractors installed systems developed by Applied Technology Inc. The first was a RHAWS for radar homing and warning which had been tuned to the frequencies used by the North Vietnamese air defence system. The second system fitted was the IR-133 panoramic scan receiver which was capable of determining the type of threat being detected by the RHAWS. The 355th TFW was de-activated on 10 December 1970 as part of the Vietnamisation process. The 44th TFS also disappeared becoming the 6010th Wild Weasel Squadron by now based at Korat, although a further redesignation to the 17th WWS was made a year later in 1971.

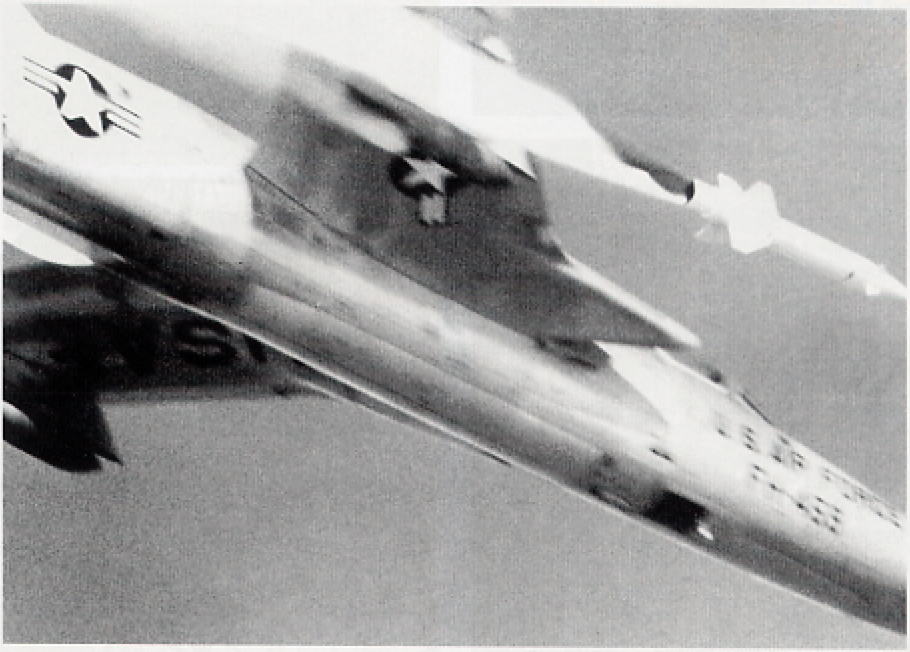
For the Wild Weasel aircraft life had been relatively quiet since the bombing halt of 1968. This fairly normal existence was disturbed when the North Vietnamese launched their Easter Offensive on 31 March 1972. In response President Nixon ordered a full resumption of the bombing campaign against the north. Fully involved from the outset the F-105Gs of the 17th WWS started the offensive under strength as the squadron had suffered the loss of 14 aircraft undertak-

Complete with reverse wraparound camouflage and one of the very few Thunderchiefs to have a shark's mouth on the nose this F-105G ended its days with the Georgia ANG. (via Dennis R.Jenkins)





When their war service was over the surviving Thunderchiefs were finally assigned to AFRES such as F-105D T-Stick II 61-0047 of the 301st TFW. The enlarged spine of this variant can easily be seen (A.W.Hall)



The AGM-12 Bullpup was allocated to the Thunderchief for use in Vietnam. Here a test round is launched with the requisite tongue of flame from a trials F-105D. (via Dennis R.Jenkins)

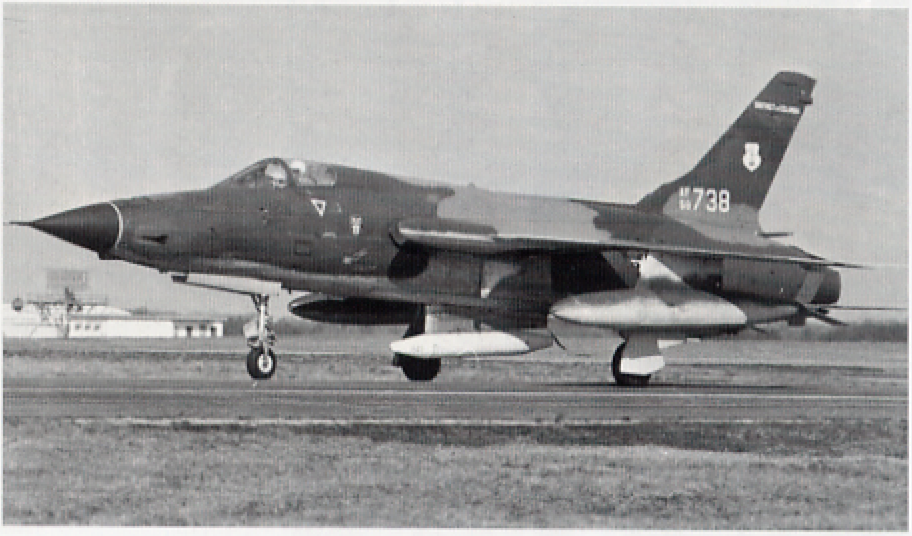
ing their normal range of missions. This new campaign became known as Operation Linebacker and the Wild Weasels were under pressure from the beginning. To replace the losses suffered by the 17th WWS replacement aircraft were transferred from units in the United States. Also entering the fighting were the aircraft of Det.1 of the 561st TFS whose F-105Gs were deployed to Korat. Another unit also entered the fray, this being the 67th TFS equipped with the F-4C Wild Weasel.

Linebacker was so intense that even with increased assets the Wild Weasels were sometimes flying up to four missions per day, two in daylight hours, the remainder being flown at night. During Linebacker II which began on 18 December 1972 the Wild Weasel units began to hunt SAM sites in Hunter Killer pairs, only this time the missile carrier was the F-4E Phantom instead of the F-105D. As North Vietnam had not been bombed for three years its air defences had become almost impenetrable thus the Wild Weasel aircraft were fighting a losing battle from the outset. Another factor that complicated matters was the habit of the NVA of launching up to 100 SAM's at the attacking bomber force which made their containment very difficult.

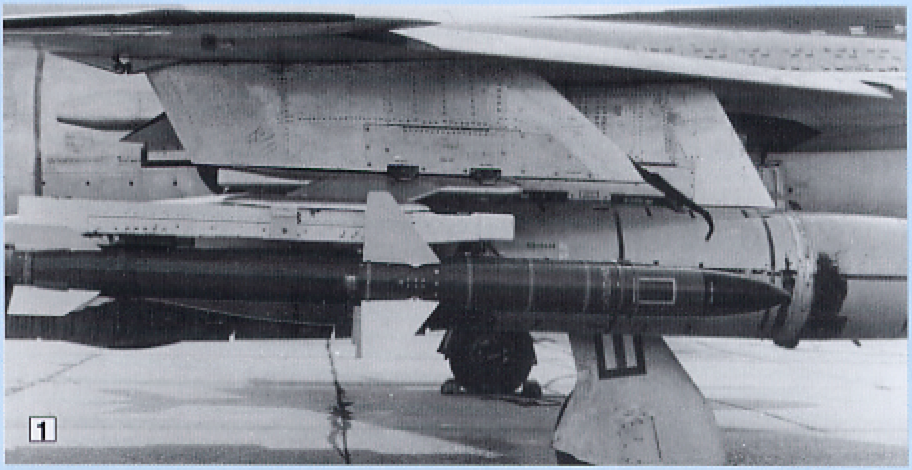
Even so the Wild Weasels had some success as they managed to hit the radars controlling the SAMs. In response the NVA began to launch missiles with little or no guidance relying on proximity fuses to destroy their targets. Although this method had some success the loss rate for the B-52s did drop and the Wild Weasels were able to hit the SAM sites after the launch. On 29 December 1972 Linebacker II officially ended , the Paris Peace Talks resuming on 2 January 1973.

This marked the end of the F-105G's involvement in the Vietnam war as, by the end of August 1973, the squadrons had returned to the United States. The 561st TFS arrived at its base, McConnell AFB, on 5 September although their tenure was short lived as their assets were promptly transferred to the 35th TFW based at George AFB. The 17th WWS was to return home 12 months later, they too became part of the

Continued on page 36



Rolling towards its parking slot F-105D, 59-1738, had just landed at Andrews AFB wearing the markings of the 121st TFS of the District of Colombia ANG. (A.W.Hall)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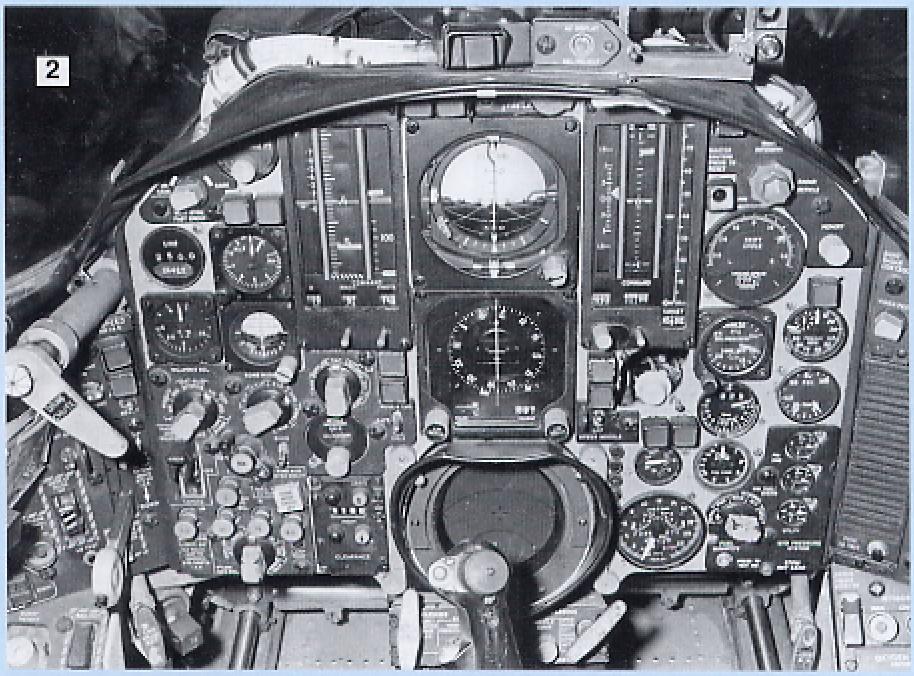
THUNDERCHIEF IN DETAIL
cockpit variations, armament and close-up pictures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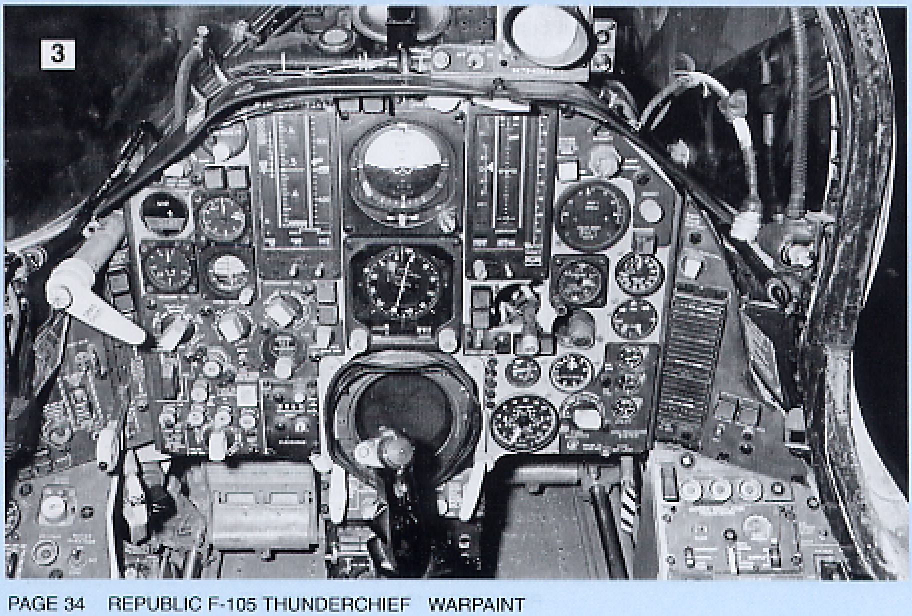
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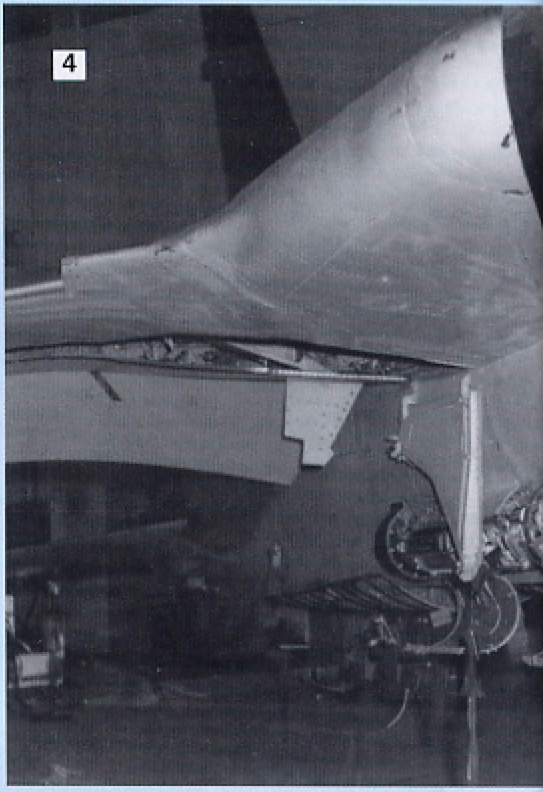
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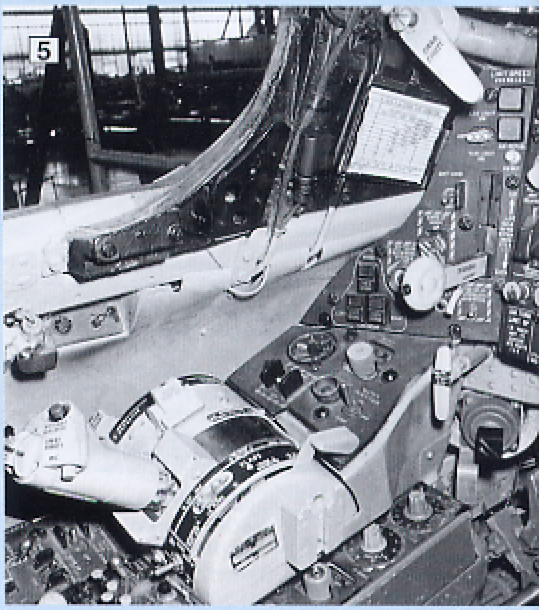
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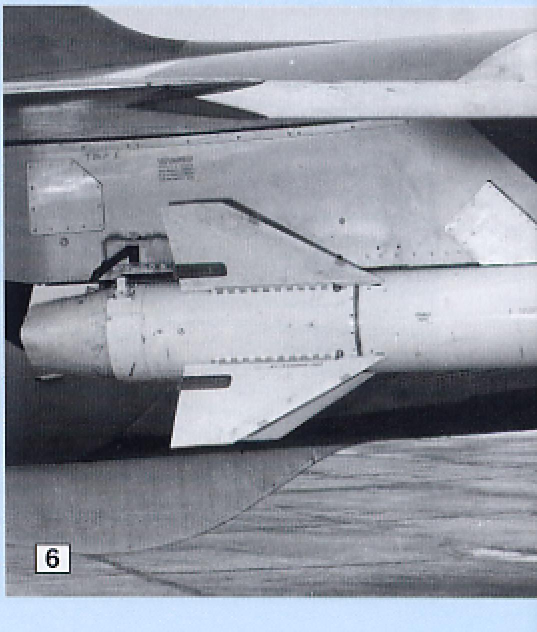
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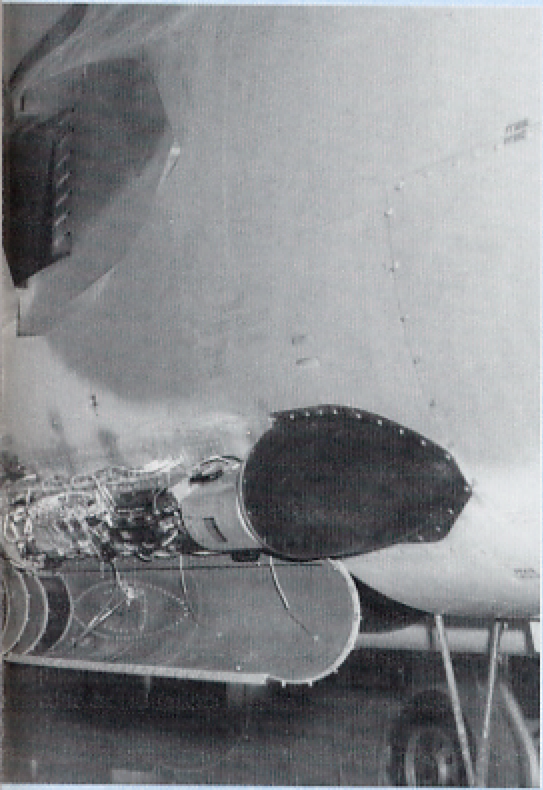
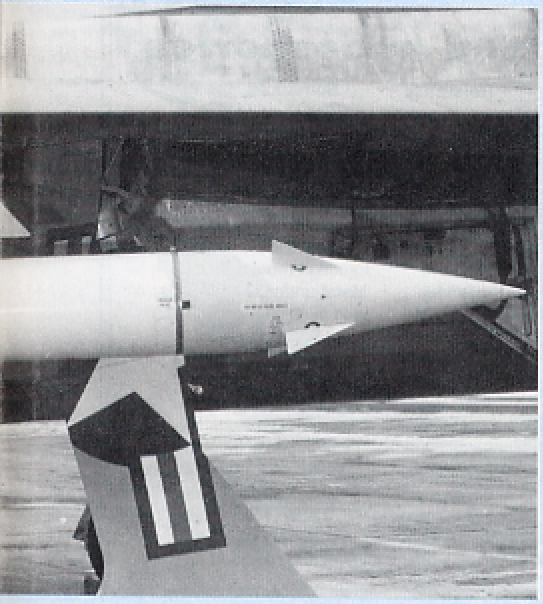


1. Complete with adapter launch rail this AGM - 45 Shrike, seen under the wings of an F-105 Thunderchief, was one of the main weapon alternatives available in Vietnam. 2. A general overview of the main pilots panel of the Thunderchief. It looks very complicated when compared with present day cockpit instrument displays. 3. This view shows the same F-105D cockpit after it had been modified for service in Vietnam. 4. This shot reveals the inner workings of the ECM equipment as fitted to the F-105G on the starboard side of the lower fuselage. 5. Mounted prominently above the side panels on the left hand side of the cockpit is the brake chute handle and throttle lever. The undercarriage retraction jack is also on the left hand side of the panel 6. The Martin AGM-12 Bullpup missile was also trialled on the Thunderchief. It was later adopted for service use. 7. Displayed in front of an early F-105B are all the instruments and avionics fitted to the type. 8. Similar to many of the aircraft in the USAF inventory in the 1970s, the F-105B was fitted with a probe for refuelling purposes essential during Vietnam operations. (All pictures via Dennis R.Jenkins)



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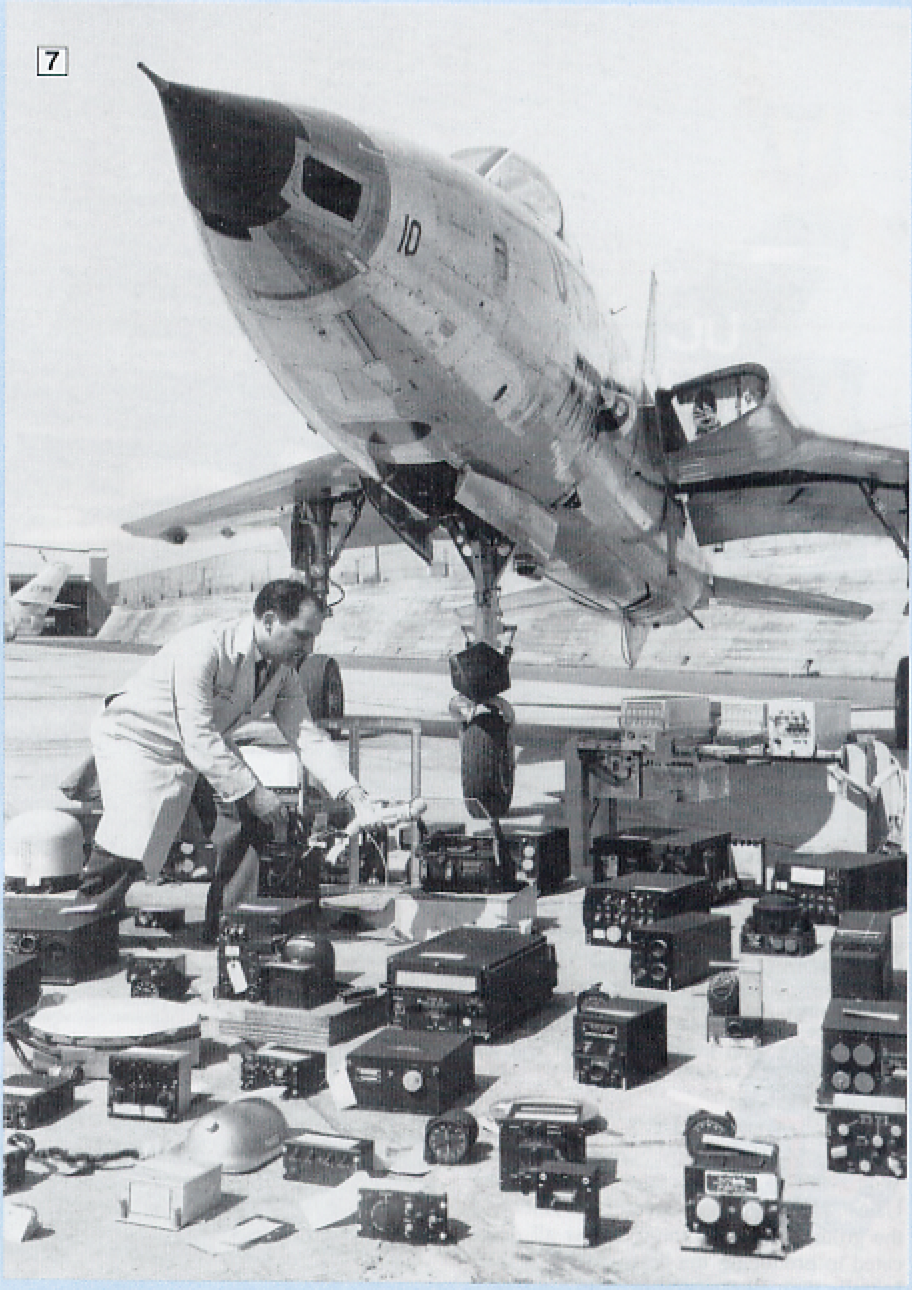

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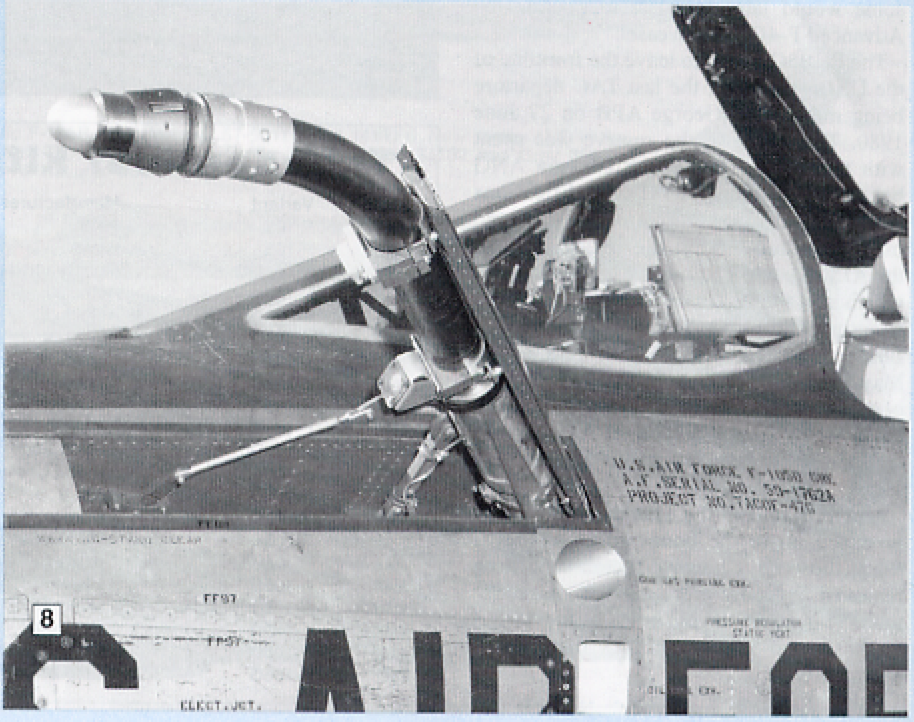
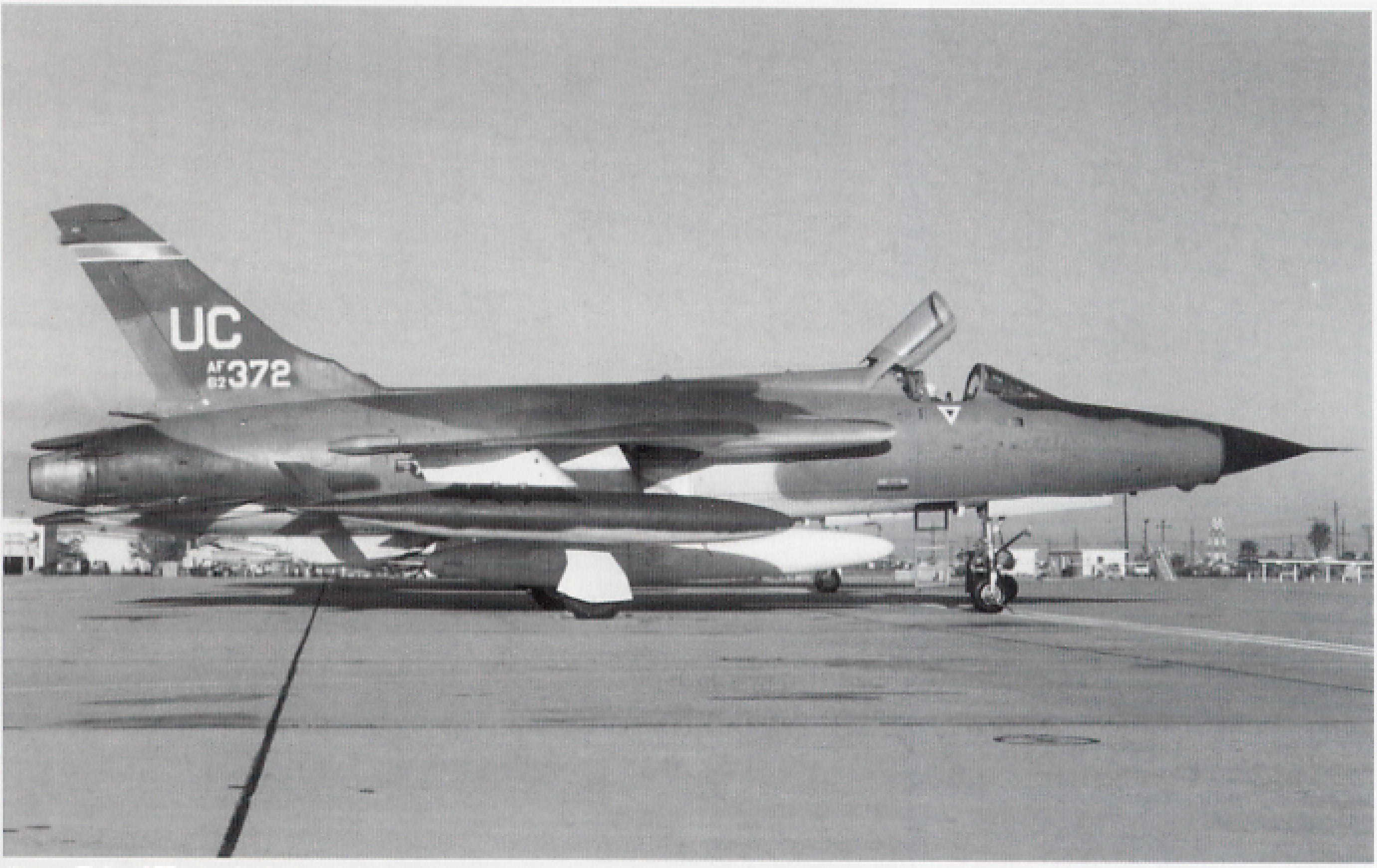
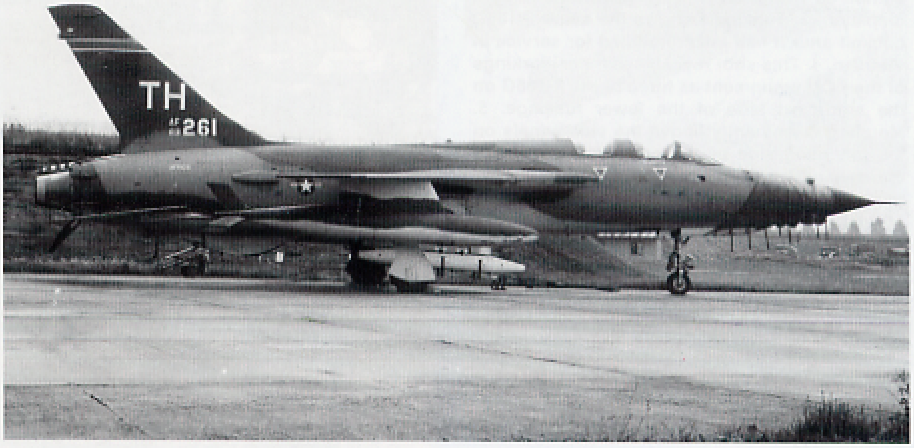




Above: Tinker AFB was the home of the 507th TFG who were the operators of this F-105D, 62-4372, which came complete with fuel tanks under the wings and the centreline point. Camouflage was the standard two tone green and Tan over Grey. (via Dennis R.Jenkins)
Right: When the 465th TFW AFRES, visited Sculthorpe in 1978 they brought two-seat F-105F, 63-8236, with them for support and joy rides for VIP's. (A.W.Hall)



Continued from page 33

35th TFW as the 562nd TFS.

George AFB was now recognised as the Wild Weasel base for the whole of the USAF. Here lived the operational units and the ground and air training assets all dedicated to producing the best crews possible. Initially they all flew the F-105G , however some would later graduate to operate the Advanced F-4G Wild Weasel.

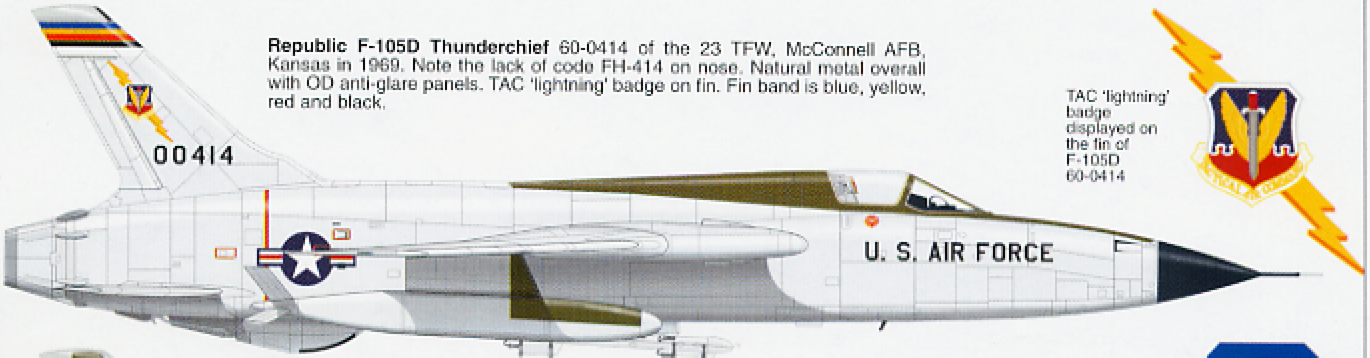
The F-105G began to leave the frontline of the USAF in 1978 , the last TAC departure being made from George AFB on 27 June 1980. Their time in the reserve was spent with the 128th TFS of the Georgia ANG based at Dobbins AFB. Modifications embodied into these aircraft were few and mainly centred around the replacement of the ALR-31 with the more capable ALR-46 which saw the return of the standard F-105 wingtip. The Wild Weasel Thunderchiefs finally retired from the 128th TFS on 25 May 1983, a few months later the last flight of an F-105D was made from Hill AFB, Utah, when the 466th TFS of AFRES said farewell to its last aircraft on 25 February 1984.

Upon retirement the Thunderchiefs mainly ended up in the boneyard at AMARC. Since those days however some have been removed and now grace various museums, municipal parks and air bases as memorials to those who gave their lives fighting the Vietnam War.

Thunderchief kits and accessories

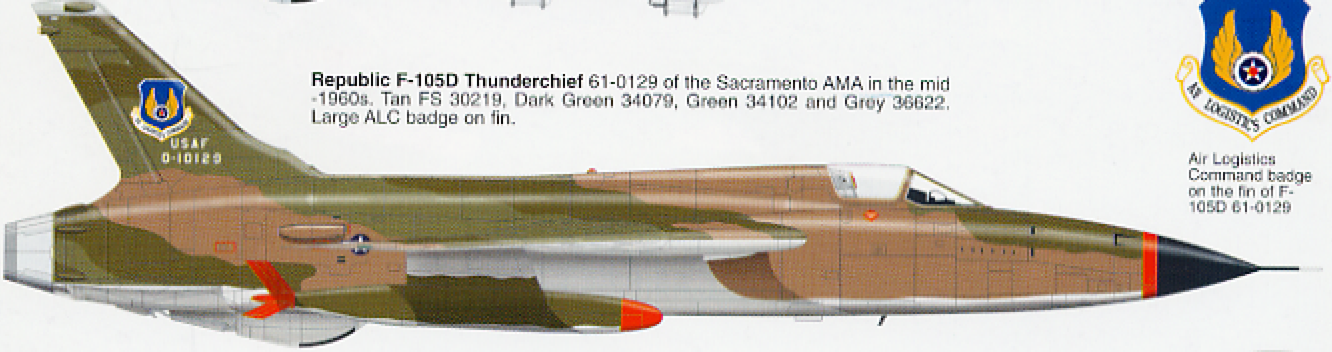
Scale	Variant	Manufacturer	Reference	Remarks
1:72	F-105	Airfix	-	Injection moulded kit
1:72	F-105	Revell	-	Injection moulded kit
1:72	F-105F/G	Monogram	-	Injection moulded kit
1:72	F-105	Aeroclub	ABEJ032	Seats
1:72	F-105	Aeroclub	ABV171	Metal undercarriage
1:72	F-105D	Airwaves	AES72043	Thunderstick II spine
1:72	F-105G	Superscale	SS72370	4 sets decals
1:48	F-105D	Monogram	MG5840	Injection moulded kit
1:48	F-105	Aeroclub	ABV153	Metal undercarriage legs
1:48	F-105G	Black Box	BB48015	Wild Weasel cockpit
1:48	F-105D/F	Cutting Edge	CED48181	Vietnam set decals
1:48	F-105A/B	Experts Choice	EC4824	Chase planes decals
1:48	F-105D	Eduard	ED48393	Etched parts
1:48	F-105G	Aeromaster	AMD48507	Wild Weasel decals
1:48	F-105B	Apollo D Cal	APD4005	Thunderbirds decals
1:48	F-105F/G	Teknics	TK48050	Brass undercarriage parts
1:48	F-105D	Airwaves	AES48079	Thunderstick II spine
1:48	F-105D/F	Cutting Edge	CED48180	Decals Pt.II
1:48	F-105D	Superscale	SS48815	2 sets decals
1:32	F-105D	Trumpeter	TP32201	Injection moulded kit
1:32	F-105G	Trumpeter	TP32202	Injection moulded kit

Republic F-105D Thunderchief 60-0414 of the 23 TFW, McConnell AFB, Kansas in 1969. Note the lack of code FH-414 on nose. Natural metal overall with OD anti-glare panels. TAC 'lightning' badge on fin. Fin band is blue, yellow, red and black.



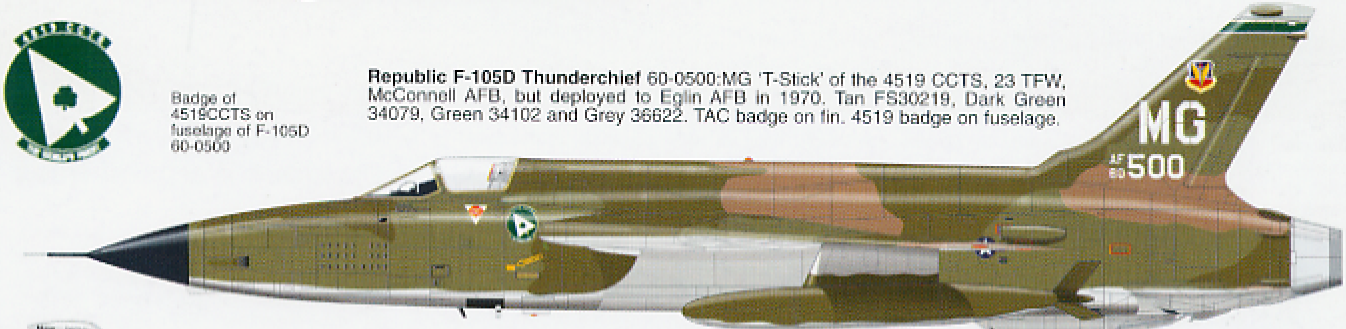
TAC 'lightning' badge displayed on the fin of F-105D 60-0414

Republic F-105D Thunderchief 61-0129 of the Sacramento AMA in the mid -1960s. Tan FS 30219, Dark Green 34079, Green 34102 and Grey 36622. Large ALC badge on fin.



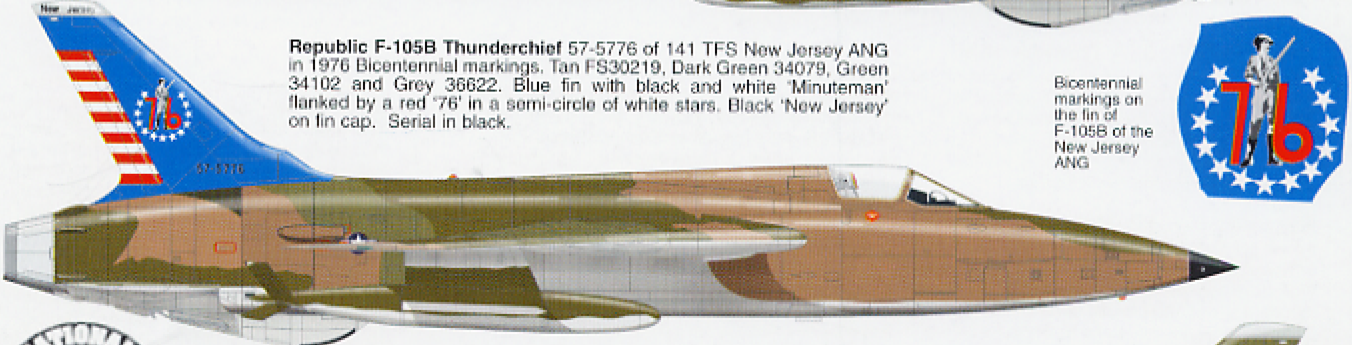
Air Logistics Command badge on the fin of F-105D 61-0129

Republic F-105D Thunderchief 60-0500:MG 'T-Stick' of the 4519 CCTS, 23 TFW, McConnell AFB, but deployed to Eglin AFB in 1970. Tan FS30219, Dark Green 34079, Green 34102 and Grey 36622. TAC badge on fin. 4519 badge on fuselage.



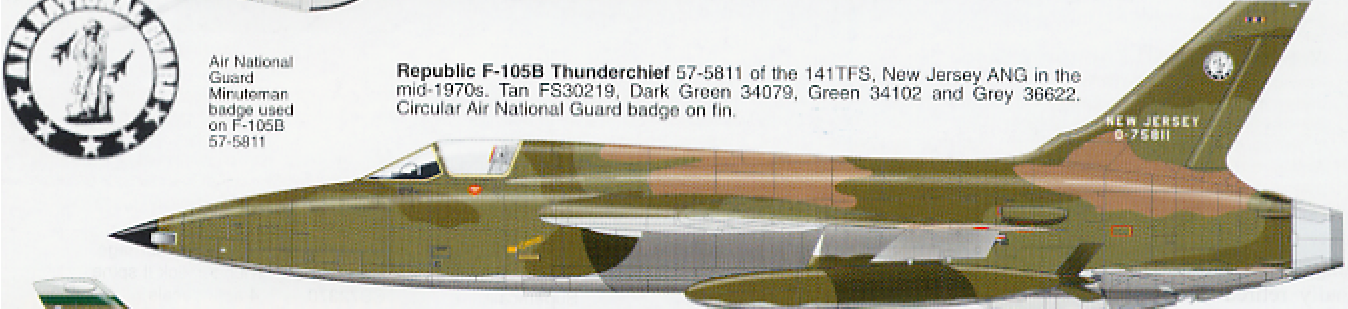
Badge of 4519CCTS on fuselage of F-105D 60-0500

Republic F-105B Thunderchief 57-5776 of 141 TFS New Jersey ANG in 1976 Bicentennial markings. Tan FS30219, Dark Green 34079, Green 34102 and Grey 36622. Blue fin with black and white 'Minuteman' flanked by a red '76' in a semi-circle of white stars. Black 'New Jersey' on fin cap. Serial in black.



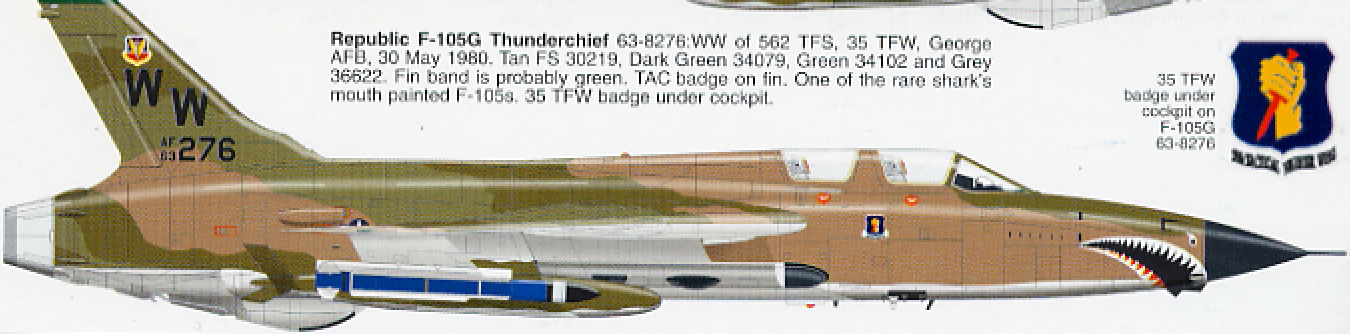
Bicentennial markings on the fin of F-105B of the New Jersey ANG

Republic F-105B Thunderchief 57-5811 of the 141TFS, New Jersey ANG in the mid-1970s. Tan FS30219, Dark Green 34079, Green 34102 and Grey 36622. Circular Air National Guard badge on fin.

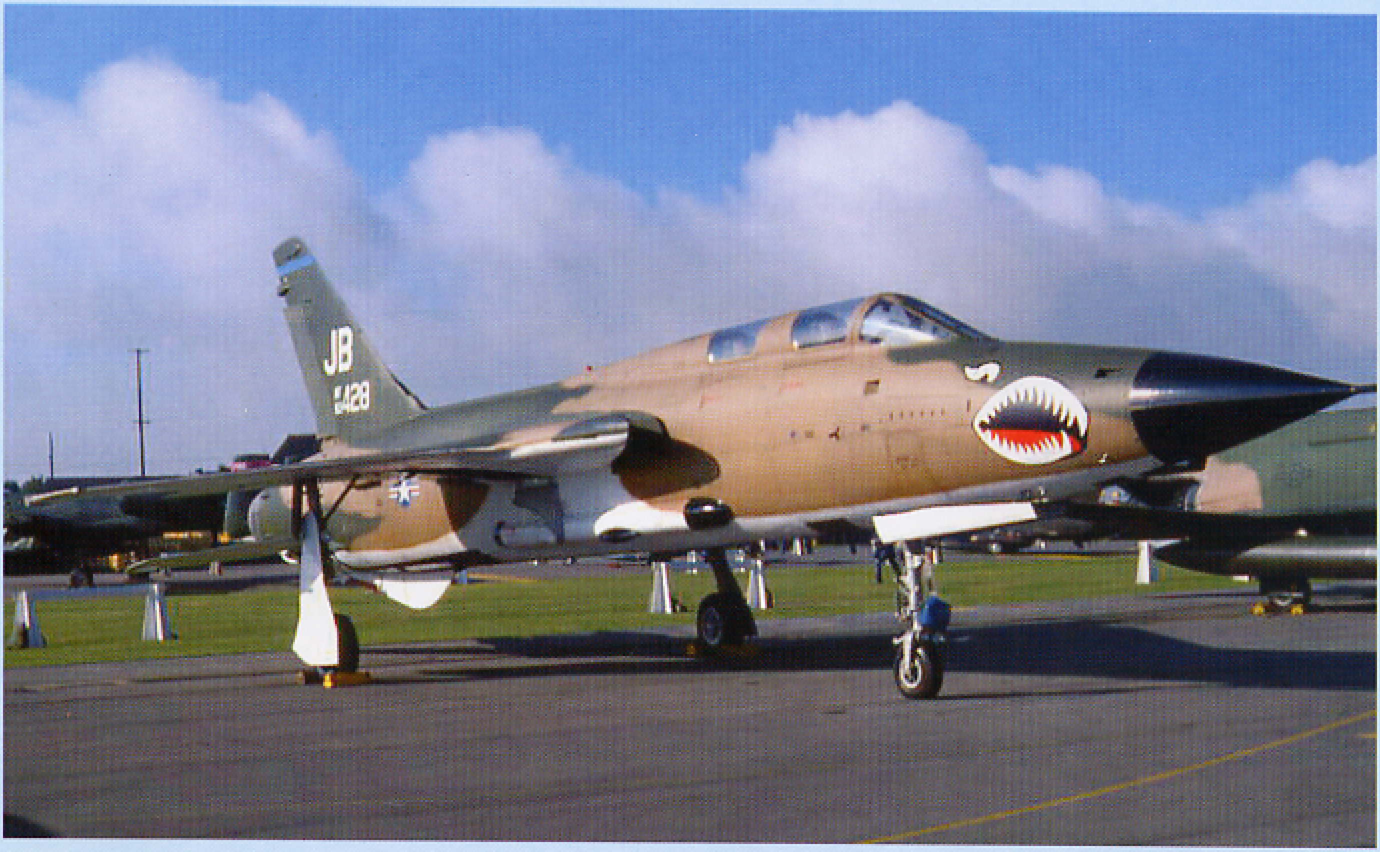


Air National Guard Minuteman badge used on F-105B 57-5811

Republic F-105G Thunderchief 63-8276:WW of 562 TFS, 35 TFW, George AFB, 30 May 1980. Tan FS 30219, Dark Green 34079, Green 34102 and Grey 36622. Fin band is probably green. TAC badge on fin. One of the rare shark's mouth painted F-105s. 35 TFW badge under cockpit.



35 TFW badge under cockpit on F-105G 63-8276



The only F-105G (62-4428) preserved in Europe nowadays acts as gate guardian at the USAF Communications Centre, Croughton, Northants. It last flew operationally with the 128 TFS, Georgia ANG but taken out of storage and sent to RAF Upper Heyford when the USAF was in residence for battle damage repair training. When Upper Heyford closed it went to Croughton where it was repainted as an aircraft of 17 WWS, coded JB when serving at Korat RTAB, Thailand. (Adrian Balch)

F-105 Thunderchief specification

Republic YF-105A Thunderchief

Powerplant: P&W J57-P25 turbojet rated at 10,200 lbs st (dry), 15,000lbs st (A/B) **Span:** 34 ft 11 ins. **Length:** 61ft. 5 ins. **Height** (nominal depending on weapons load): 17 ft 6 ins **Wing area:** 385 sq.ft **Weight gross:** 40,561 lbs **Max speed:** 857 mph **Maximum ceiling:** 49.950 ft **Tactical radius:** 780 miles **Armament (internal):** one 20mm General Electric mini-gun **Armament external:** Five pylons under wings and fuselage capable of carrying fuel tanks, bombs, missiles, or rockets depending on mission requirements.

Republic F-105B Thunderchief

Powerplant: Pratt & Whitney J75-P-3 turbojet rated at 16,470 lb.st (dry) 23,500 lb.st in afterburner **Span:** 34 ft 11 ins **Length:** 61 ft 5 ins **Height (Nominal):** 19 ft 8 ins **Wing area:** 385 sq.ft. **Weight gross:** 46,998 lbs **Max speed:** 1,375 mph **Cruising speed:** 581 mph **Initial climb rate:** 34,000 ft p. min. **Maximum ceiling:** 48,100 ft. **Tactical radius:** 780 miles **Armament internal:** One 20mm General Electric multi-barrel mini-gun. **Armament external:** Five pylons under wings and fuselage for fuel tanks, bombs, missiles or rockets depending on mission requirements.

Republic F-105D Thunderchief

Powerplant: Prqtt & Whitney J75-P19W turbojet rated at 16,000 lbs.st (dry) 24,500 lbs in afterburner **Span:** 34 ft. 11 ins. **Length:** 65.ft. 5ins. **Height (nominal):** 19 ft 8 ins **Wing area:** 385 sq.ft. **Weight gross:** 52,550 lbs **Max speed:** 1,390 mph at 38,000 ft. **Cruising speed:** 584 mph at 38,000 ft. **Initial climb rate:** 34.500 ft.p.min. **Service ceiling:** 41,200 ft. **Tactical radius:** 780 miles. **Armament internal:** One 20mm General Electric multi-barrel mini-gun. **Armanent external:** Five pylons under wings and fuselage for fuel tanks, bombs, missiles or rockets depending on mission requirements.

Republic F-105F Thunderchief

Powerplant: Pratt & Whitney J75-P19W turbojet rated at 16,000 lb.st (dry) 24,500 lb. st in afterburner. **Span:** 34 ft 11 ins. **Length:** 69 ft 7.3 ins. **Height (nominal):** 20 ft. 2 ins. **Wing area:** 385 sq ft. **Weight gross:** 54,027 lbs. **Max speed:** 1,386 mph. **Cruising speed:** 540 mph. **Initial climb rate:** 34,500 ft.p.min **Service ceiling:** 41,200 ft. **Tactical radius:** 740 miles. **Armament internal:** One 20 mm General Eletric multi-barrel mini-gun. **Armament external:** Five pylons for fuel tanks, bombs, napalm, missiles or rockets depending on mission requirements.

Republic F-105G Thunderchief

Powerplant: Pratt &Whitney J75-P19W turbojet rated at 16,000 lbs st (dry) or 24,500 lbs in afterburner. **Span:** 34 ft 11 ins **Length:** 69 ft. 7.3 ins. **Height (Nominal)** 20 ft. 2 ins. **Wing area:** 385 sq.ft. **Weight gross:** 54,027 lbs. **Max speed:** 1,386 mph. **Cruising speed:** 540 mph, **Initial climb rate:** 34,500 ft.p.min, **Service ceiling:** 41,200ft. **Tactical radius:** 740 miles. **Fixed internal armament:**One 20mm General Electric multi-barelled mini-gun. **Armament External:** Five pylons under the wing and central fuselage for fuel tanks, bombs, napalm, missiles or rockets depending on mission requirements.

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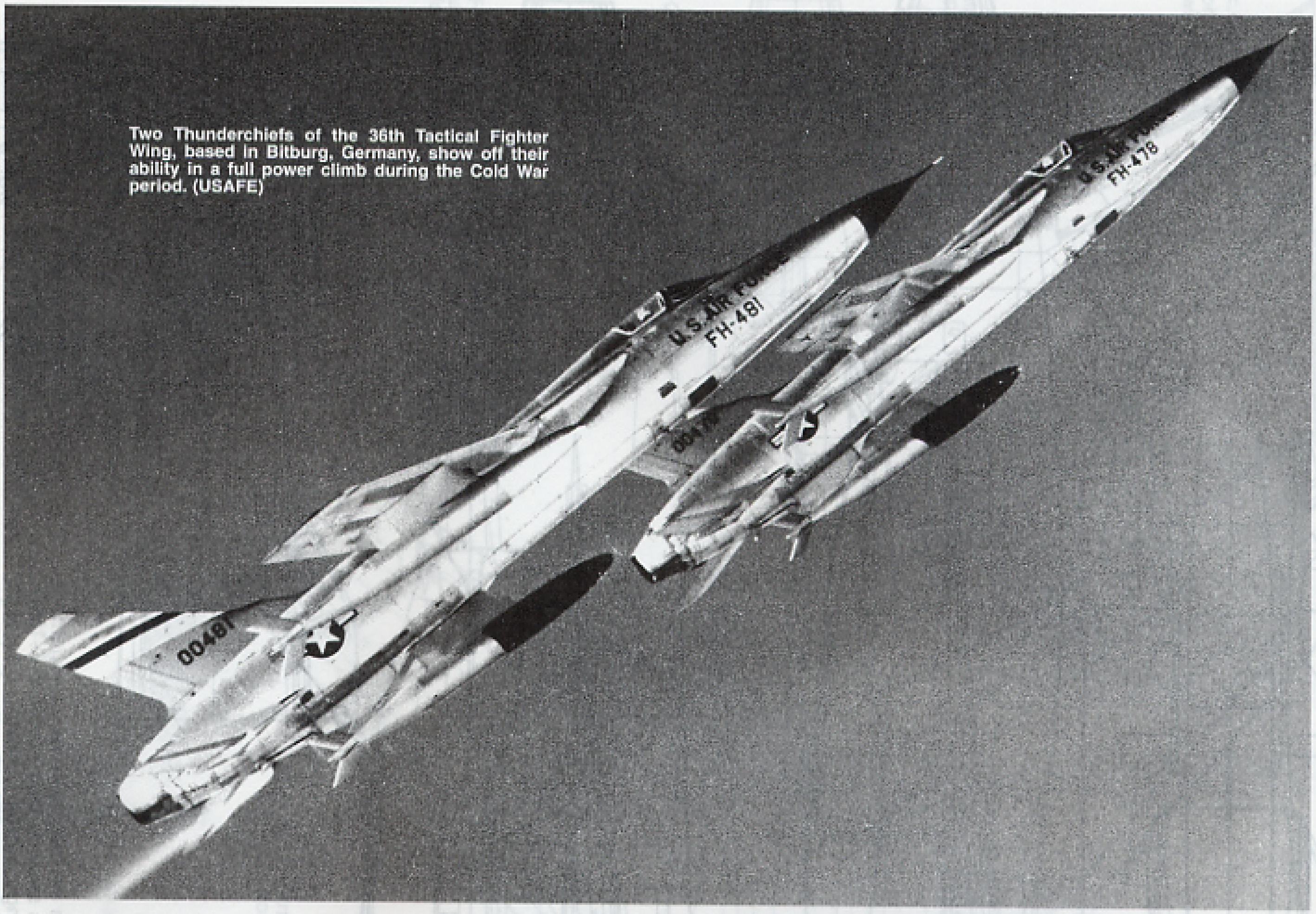
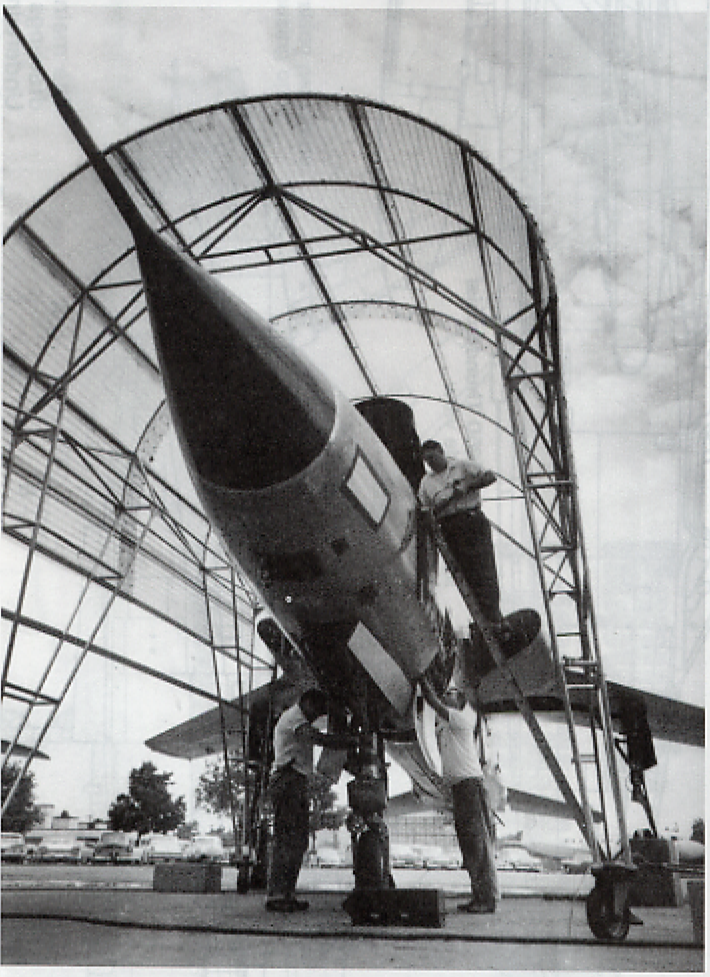
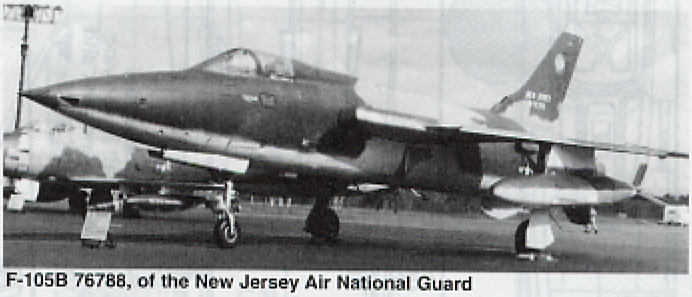


Two Thunderchiefs of the 36th Tactical Fighter Wing, based in Bitburg, Germany, show off their ability in a full power climb during the Cold War period. (USAFE)

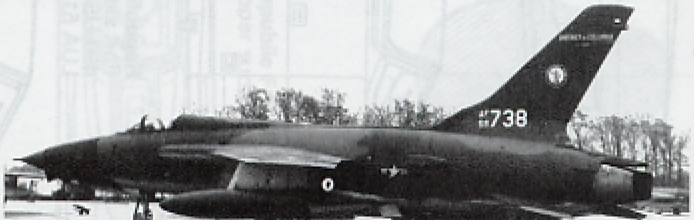
Republic F-105 Thunderchief picture gallery



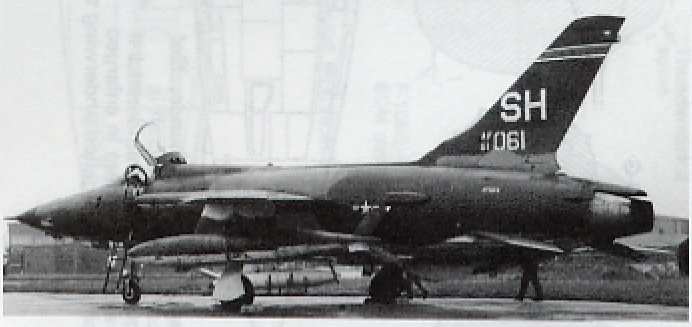
Above: This unusual fibreglass canopy designed by Republic at Farmingdale was used by technicians in the field to cover the aircraft whilst installations and tests were made to sensitive electronic equipment in bad weather. Each shelter was equipped with lights for night work. Right: An Air Force Reserve F-105D 61061, belonging to the 465thTFS, 507th TFG.

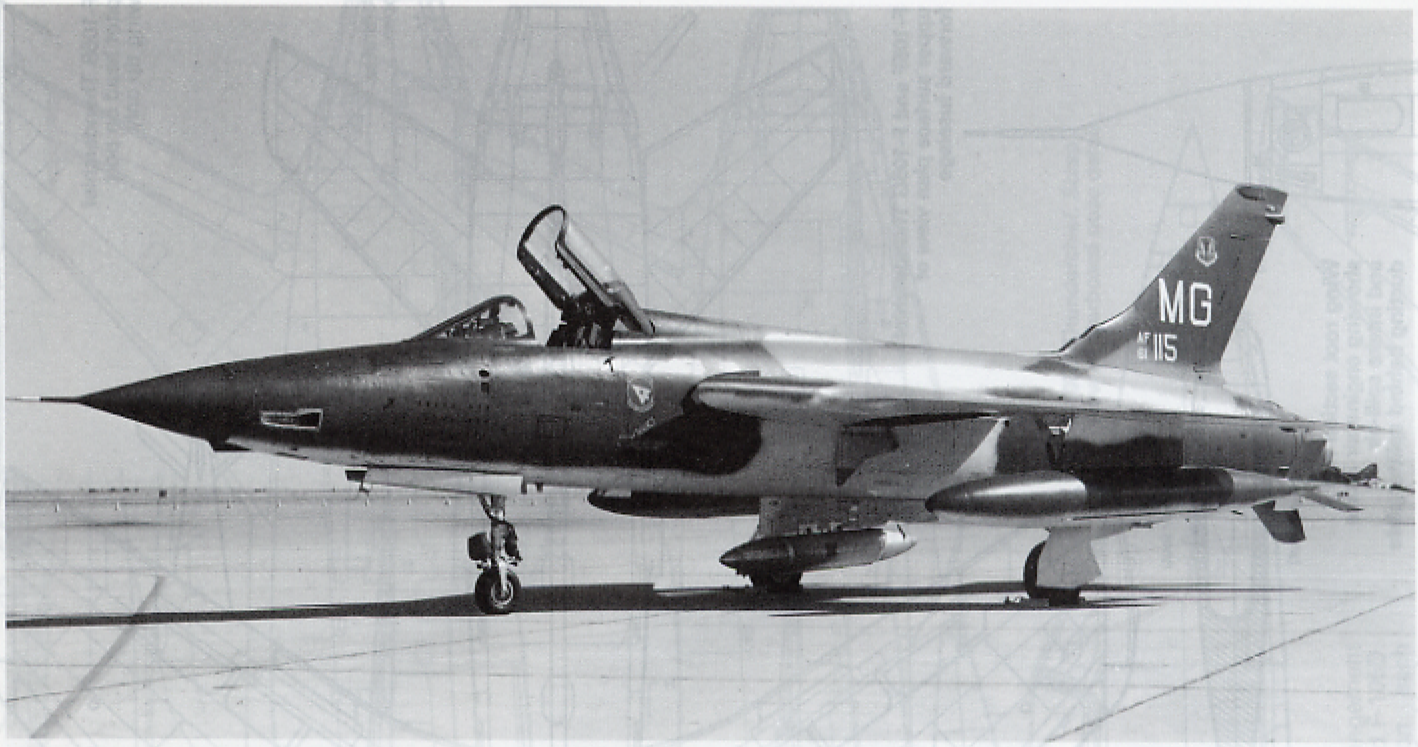


F-105B 76788, of the New Jersey Air National Guard

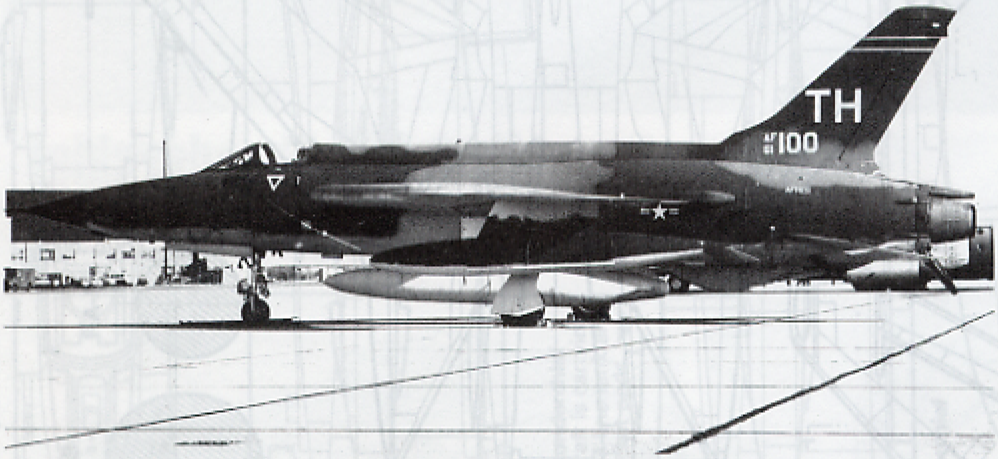


F-105D 59738, of the 121st TFS, District of Columbia Air National Guard.

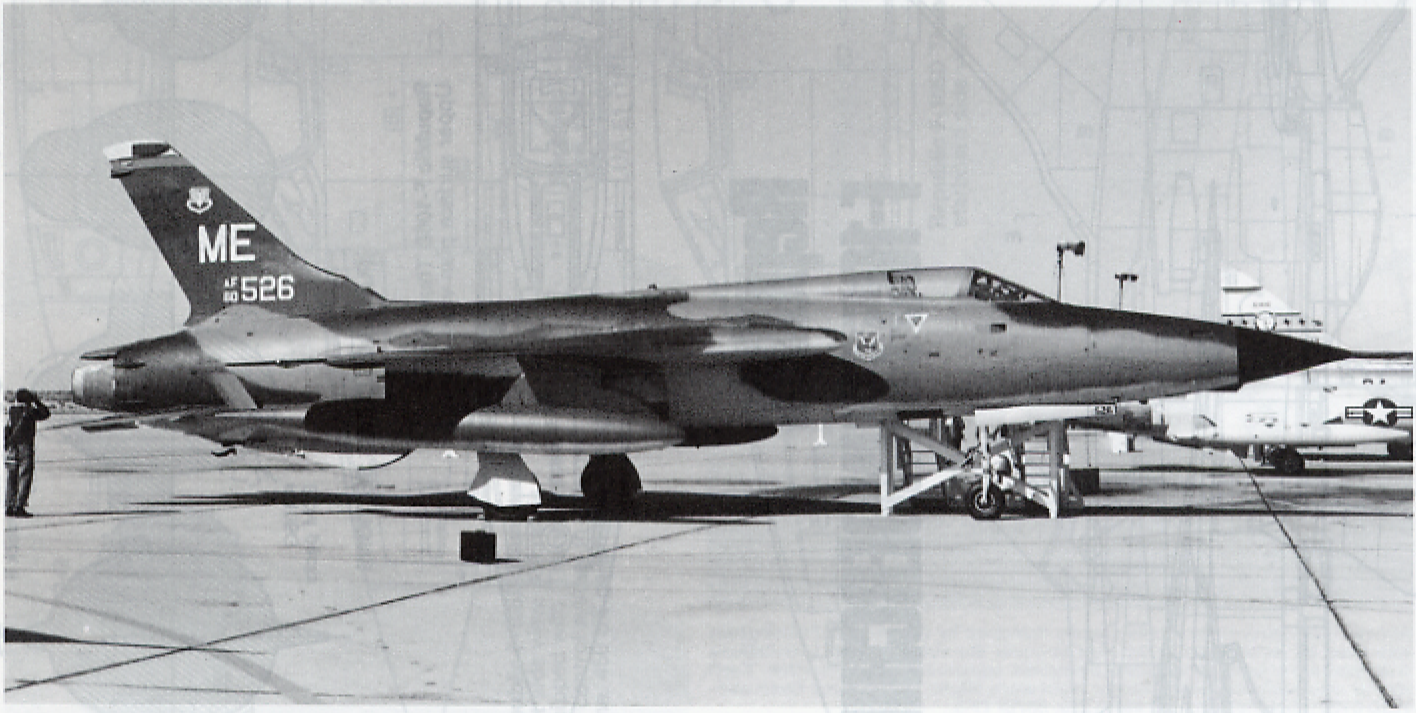


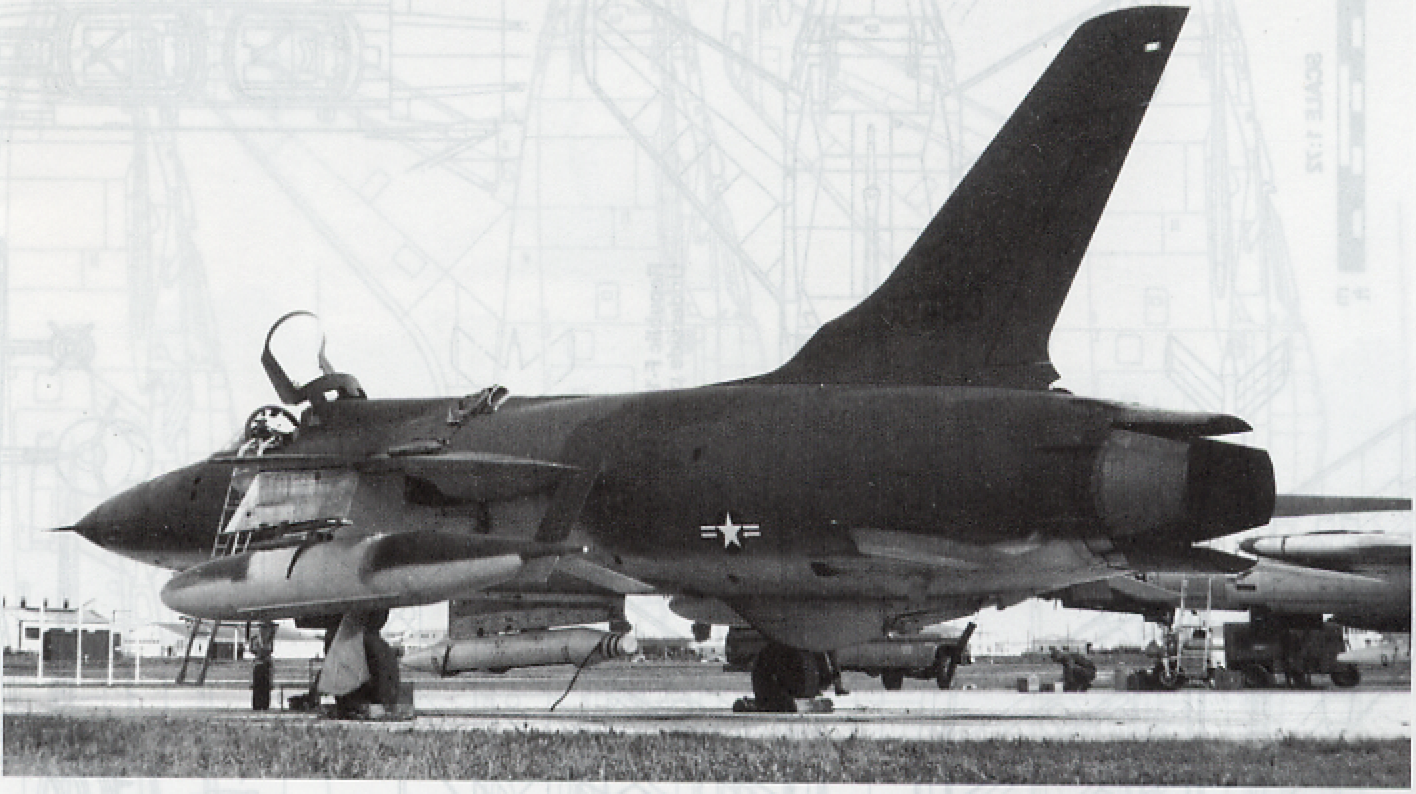


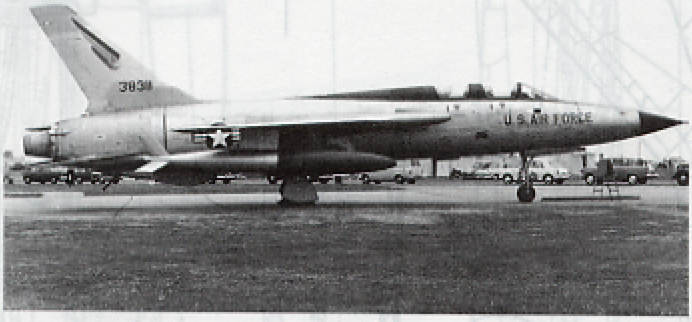
Above and below: Two Thunderchiefs of the same 23rd Tactical Fighter Wing but of different versions. That above is an F-105D, 61115, coded MG, and that below is an F-105D 60526,of the 562nd TFS having the code ME on the fin. Both were photographed in the States but also saw service in Vietnam for several deployments. (MAP).

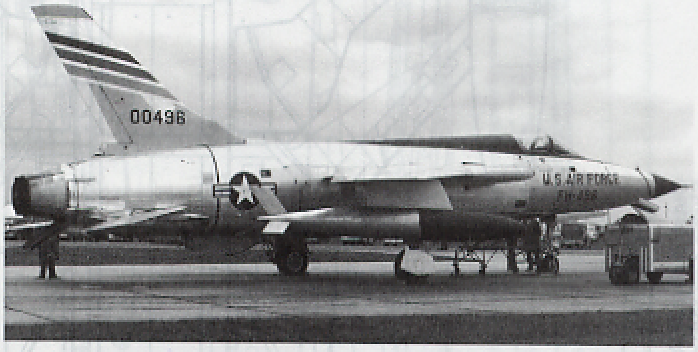


Centre: An F-105D 61100, in service with the 465th TFS, 301st TFW based at Tinker Air Force base in the late-60s. This unit was part of the Air Force Reserve and although war-weary served with some distinction during the later days of the F-105's service (M.C.Klaver)

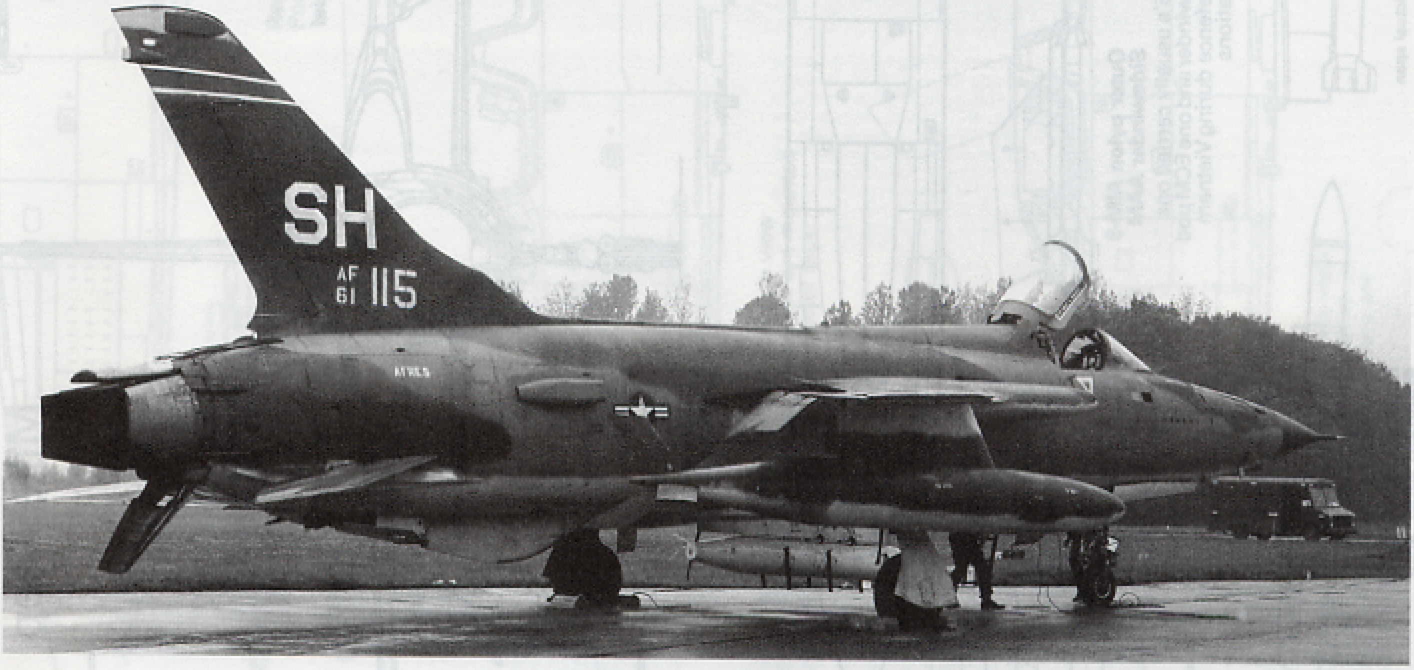


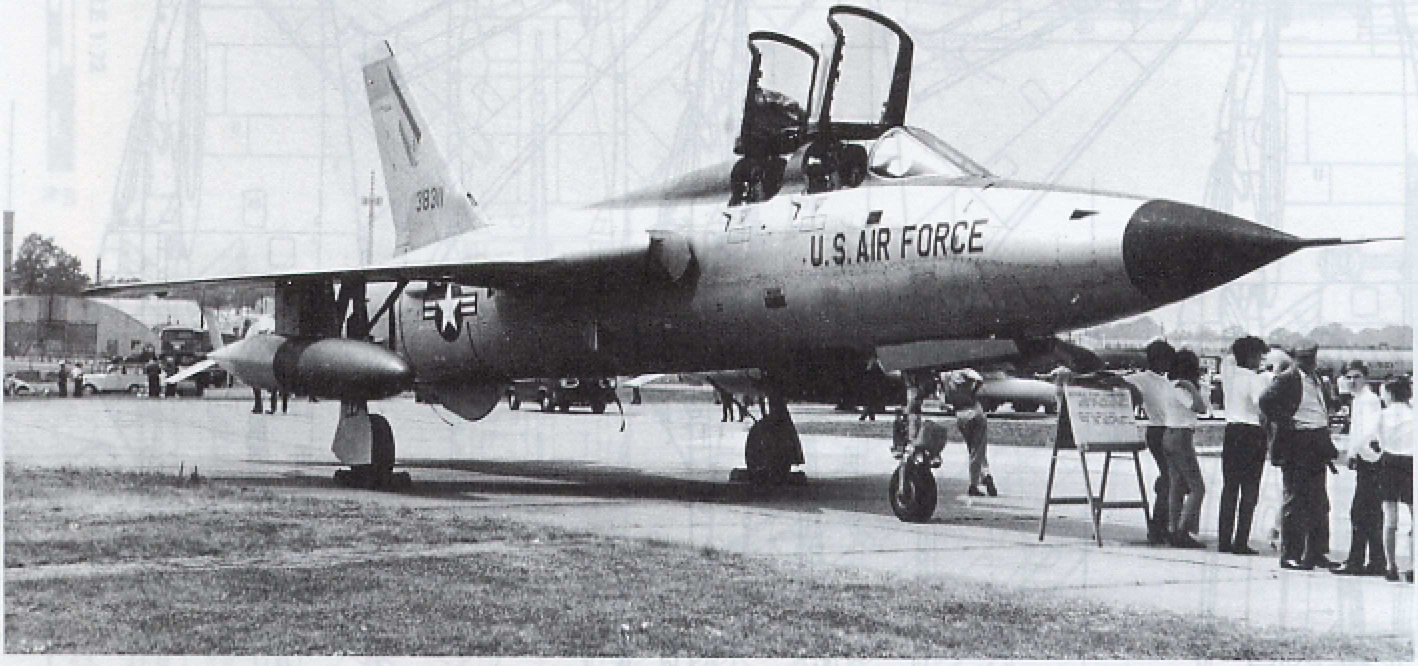


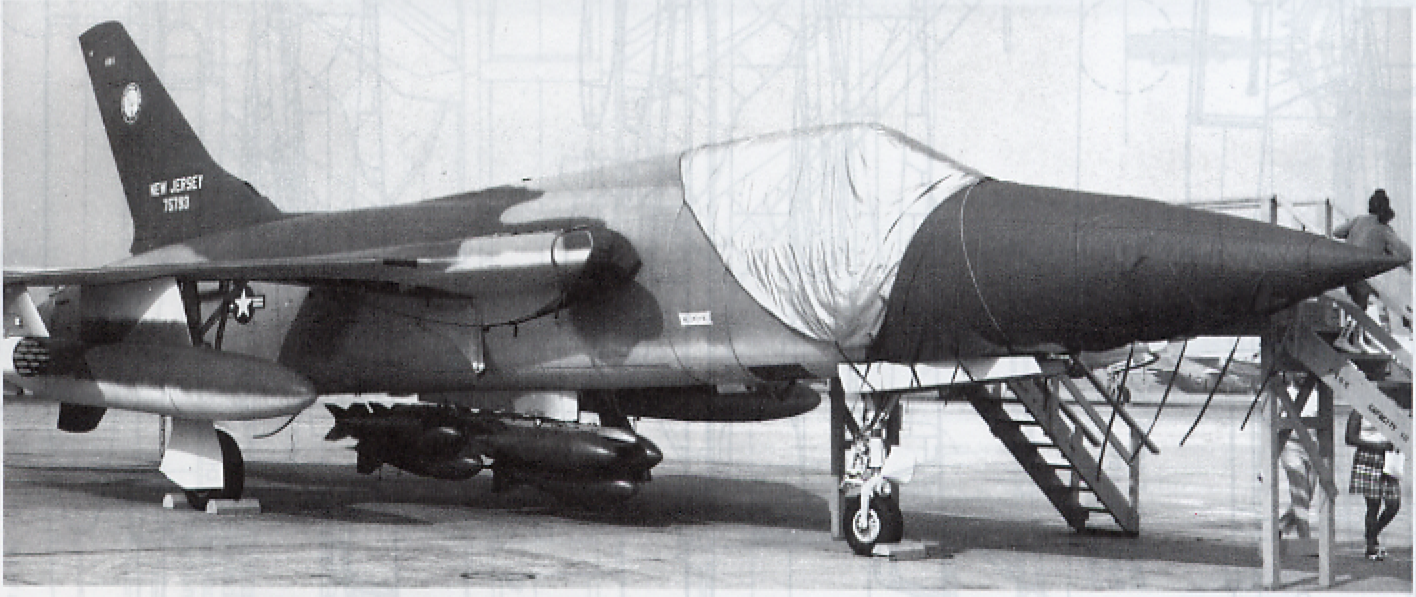




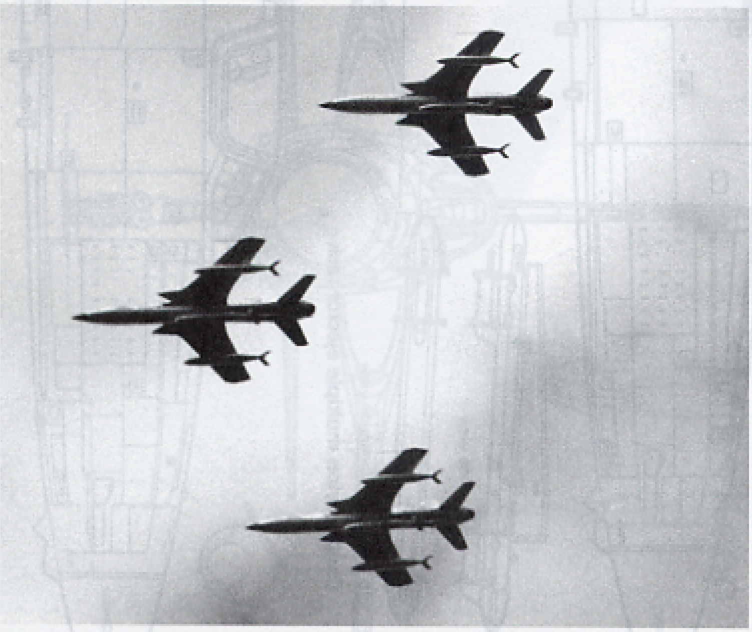
Top: Almost certainly an F-105D of the 36th TFW, this aircraft, serialled 00463 does not have unit markings and was probably a recent arrival at Bitburg. **Above:** F-105F 38311 all-silver of the 49th TFW at Spangdahlem. **Above right:** In full unit tail markings F-105D, 00496 seen at its Bitburg dispersal before camouflage colours were introduced. **Below:** This is an interresting picture as it compares with the same F-105B 61115 when in initial service with the 4519th TFS. It would seem that the aircraft was handed on to the 465th Tactical Fighter Squadron, 507th Tactical Fighter Wing coded SH of the Air Force Reserve. It would appear that the picture was taken on a deployment to Europe judging by the surrounding scenery. (APN)



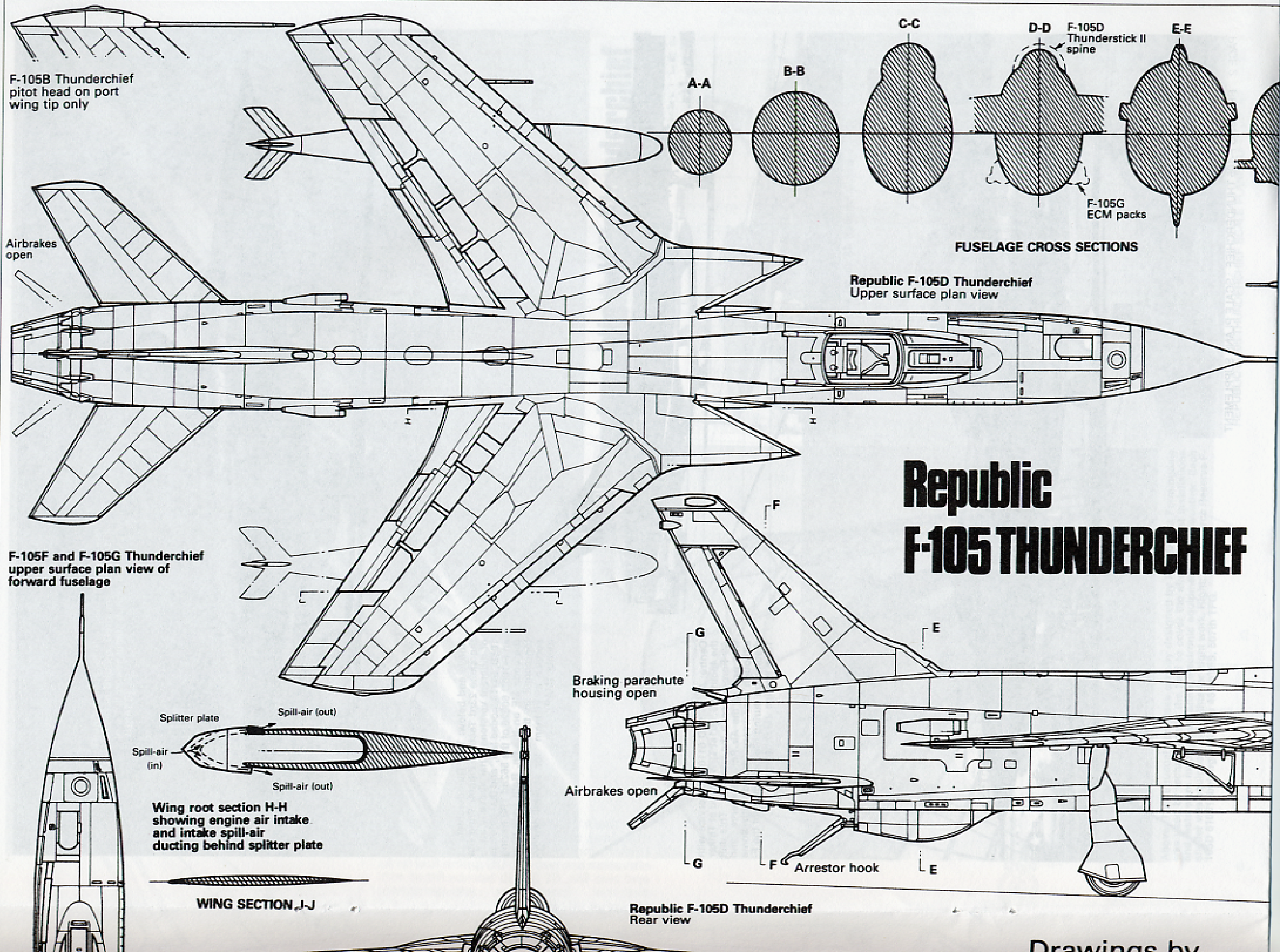




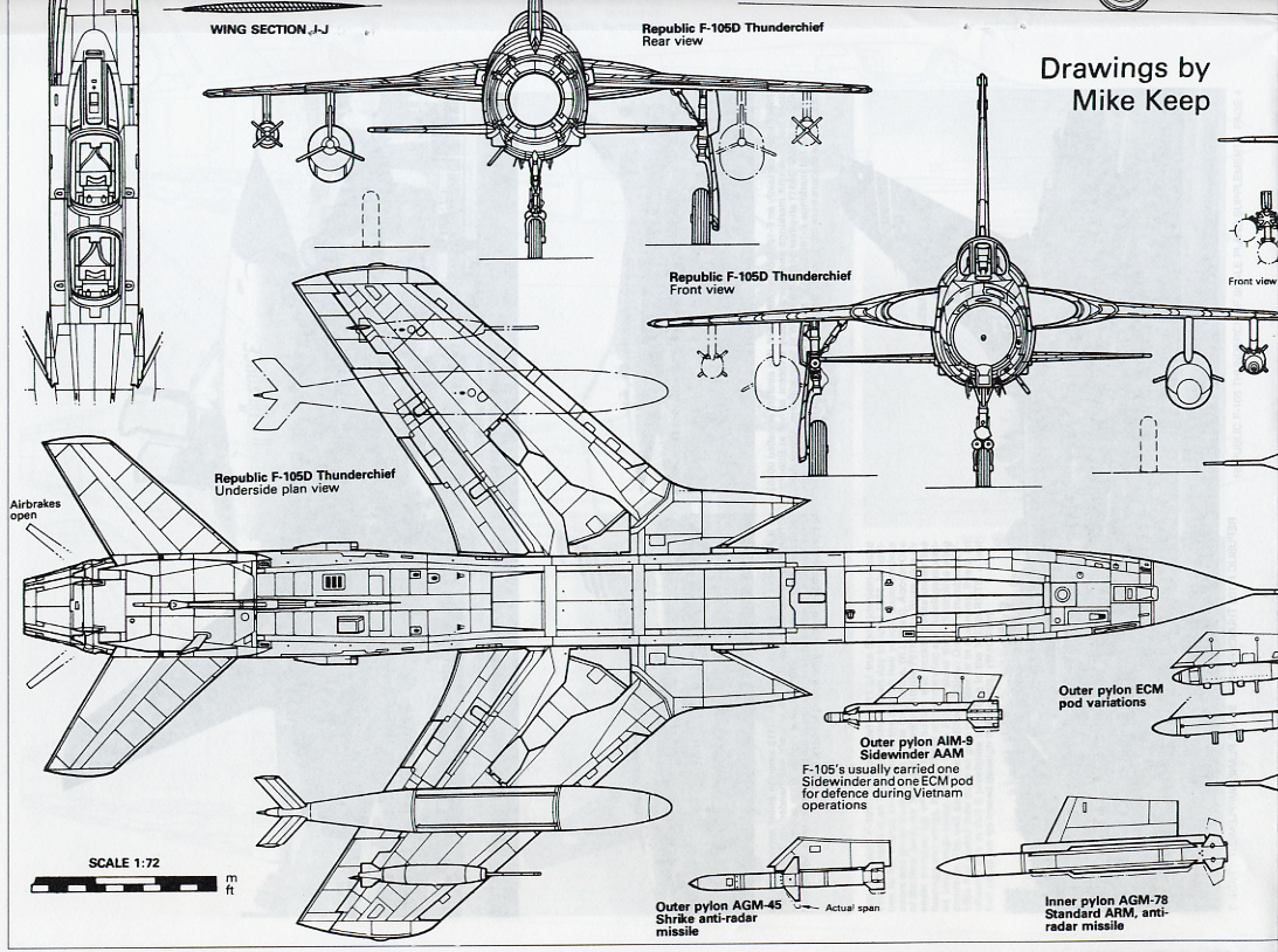
Top: Republic F-105F Thunderchief 38311 of the Spangdahlem-based 49th TFW seen at an RAF Wethersfield open day in June 1966. In addition to the overall silver scheme the aircraft had yellow undercarriage doors and green front halves to the drop tanks. (R.L.Ward). Above: One of the New Jersy Air National Guard's F-105Gs 75783 at a State-side air show bombed up with six iron bombs and rocket packs under the fuselage and wings. Right: Fitted with underwing and fuselage mounted long range tanks, these three F-105s show their distinctive wing planform. The unit cannot be identified. Below: One of a number of F-105s that ended their days as gate guardians or in museums, this is an unusual one in that it proclaims to belong to the 3727th RMTS, a unit that could not be traced through the records. (W.H.Blunt)



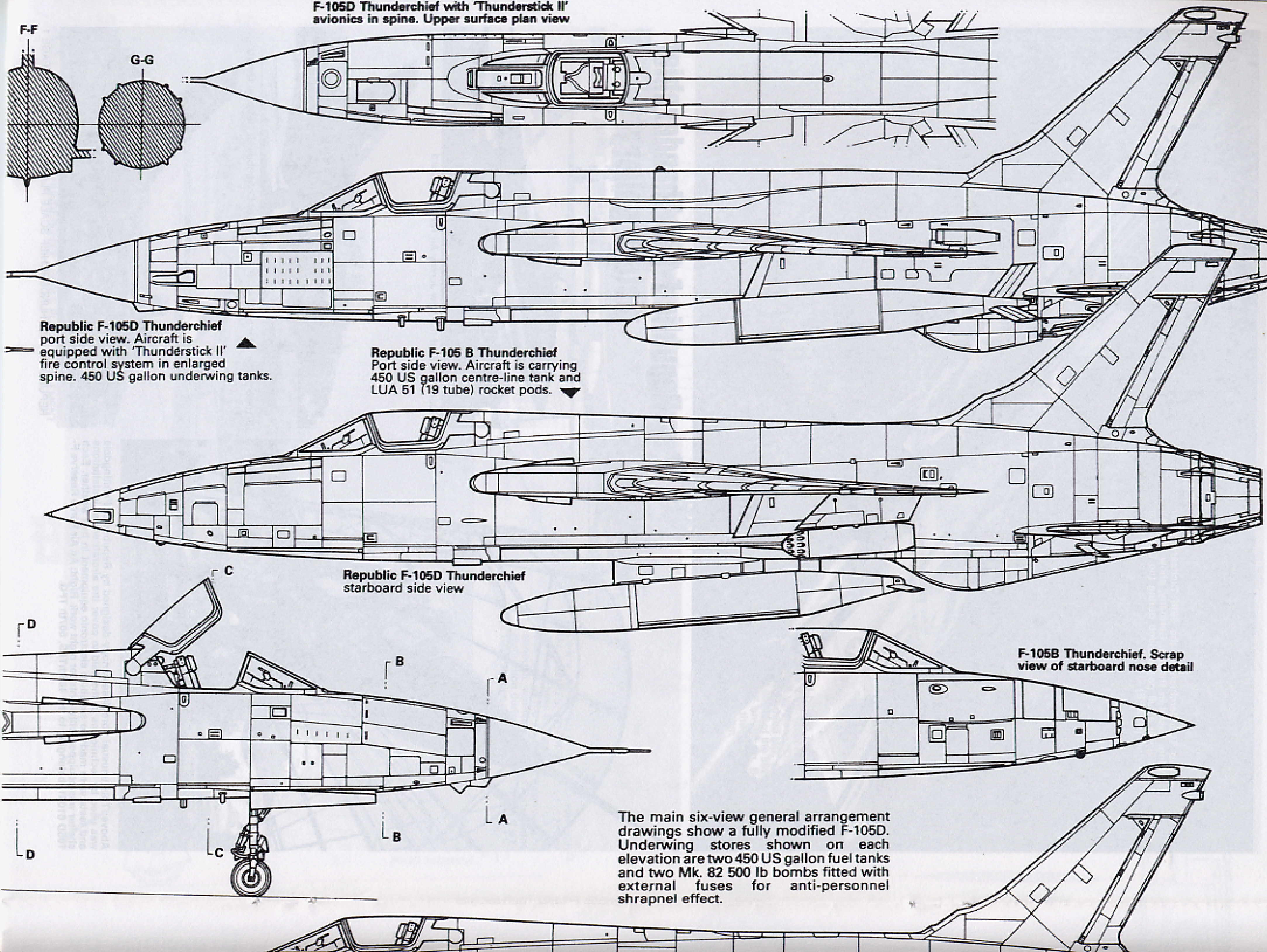
Republic F-105 THUNDERCHIEF


F-105B Thunderchief pitot head on port wing tip only
Airbrakes open
A-A
B-B
C-C
D-D
F-105D Thunderstick II spine
E-E
F-105G ECM packs
FUSELAGE CROSS SECTIONS
Republic F-105D Thunderchief Upper surface plan view
H
H
F
F-105F and F-105G Thunderchief upper surface plan view of forward fuselage
E
G
Braking parachute housing open
Splitter plate
Spill-air (out)
Spill-air (in)
Spill-air (out)
Airbrakes open
Wing root section H-H showing engine air intake and intake spill-air ducting behind splitter plate
G
F
Arrestor hook
E
WING SECTION J-J
Republic F-105D Thunderchief Rear view

Drawings by


WING SECTION J-J
Republic F-105D Thunderchief
Rear view
Republic F-105D Thunderchief
Front view
Front view
Republic F-105D Thunderchief
Underside plan view
Airbrakes open
Outer pylon ECM pod variations
Outer pylon AIM-9 Sidewinder AAM
F-105's usually carried one Sidewinder and one ECM pod for defence during Vietnam operations
SCALE 1:72
m
ft
Outer pylon AGM-45 Shrike anti-radar missile
Actual span
Inner pylon AGM-78 Standard ARM, anti-radar missile

Drawings by
Mike Keep



F-105D Thunderchief with 'Thunderstick II' avionics in spine. Upper surface plan view

Republic F-105D Thunderchief port side view. Aircraft is equipped with 'Thunderstick II' fire control system in enlarged spine. 450 US gallon underwing tanks. ▲

Republic F-105 B Thunderchief Port side view. Aircraft is carrying 450 US gallon centre-line tank and LUA 51 (19 tube) rocket pods. ▼

Republic F-105D Thunderchief starboard side view

F-105B Thunderchief. Scrap view of starboard nose detail

The main six-view general arrangement drawings show a fully modified F-105D. Underwing stores shown on each elevation are two 450 US gallon fuel tanks and two Mk. 82 500 lb bombs fitted with external fuses for anti-personnel shrapnel effect.

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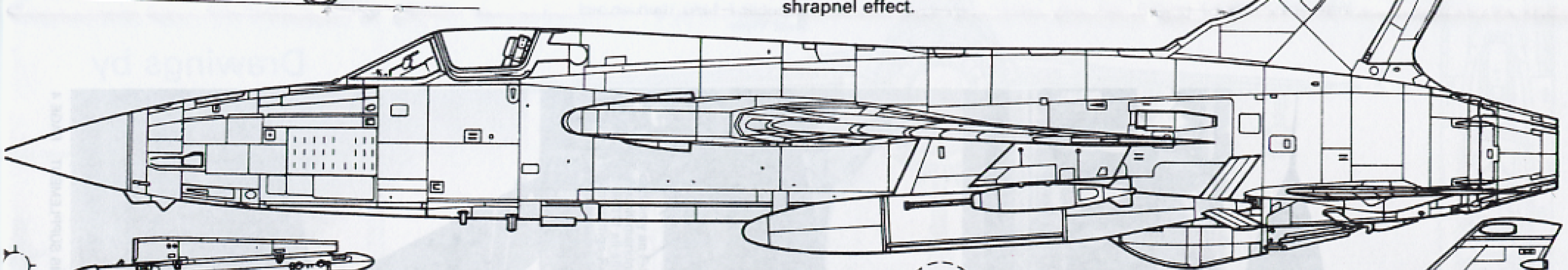
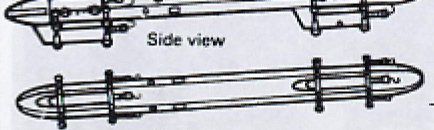
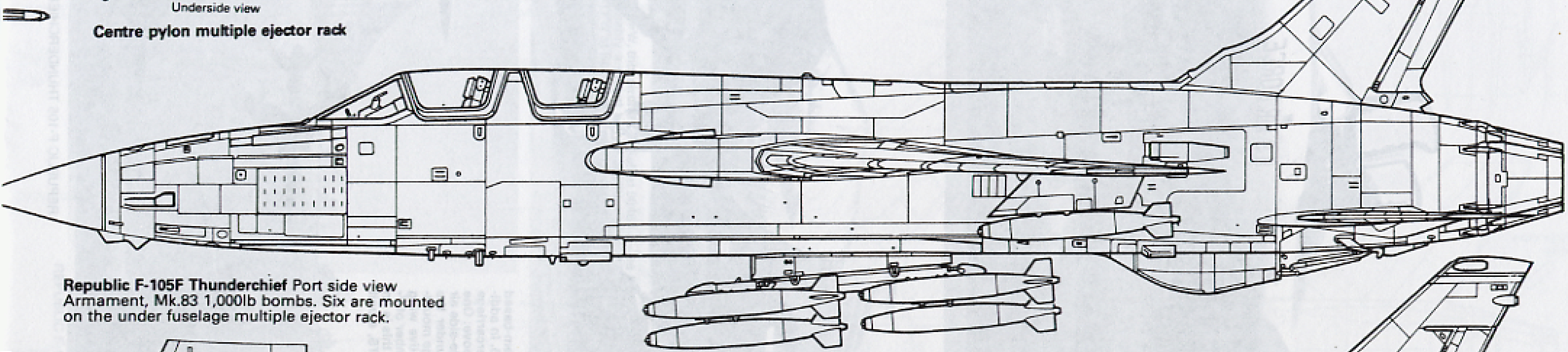


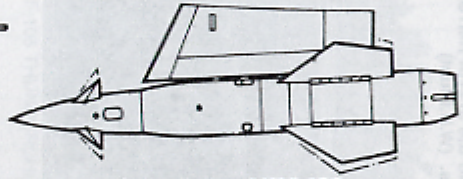
Republic F-105D Thunderchief
Port side view



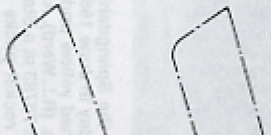
Centre pylon multiple ejector rack



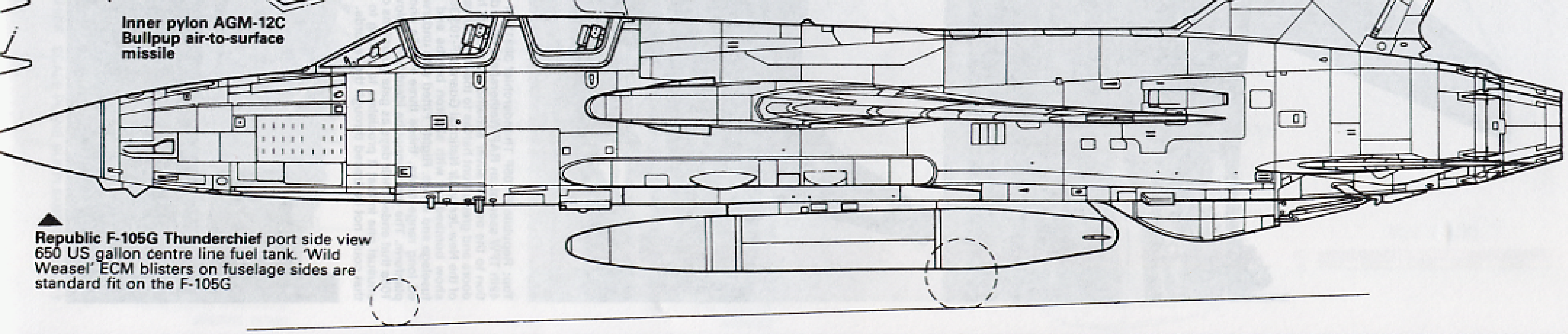
Republic F-105F Thunderchief Port side view Armament, Mk.83 1,000lb bombs. Six are mounted on the under fuselage multiple ejector rack.



Inner pylon AGM-12C Bullpup air-to-surface missile



Canopies in raised position.



Republic F-105G Thunderchief port side view 650 US gallon centre line fuel tank. 'Wild Weasel' ECM blisters on fuselage sides are standard fit on the F-105G